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Vol. LXIII.] [Part I.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY.

MARCH, 1900.

The INTERNATIONAL MONEY MARKET. *By* CORNELIUS ROZENRAAD.

[Read before the Royal Statistical Society, 16th January, 1900.
RICHARD B. MARTIN, Esq., M.A., M.P., Vice-President, in the Chair.]

IF the history of the nations may be learned from their budgets, the history of their commerce is mirrored in the weekly returns of the banks, in their discount rates, and in the fluctuations of the rates of exchange. And from time to time, the figures seem to speak more loudly, while the statistics of the different countries, taken together, place before our eyes, with crystal clearness, the commercial struggle of the nations, showing us how their respective liabilities have arisen, in what manner they will have to set to work to fulfil them. Nay, more! Events of a financial and monetary character, so closely connected with politics, enable us to form an opinion concerning many things that at the first glance seem obscure, to acquire a clearer understanding of the history of the world. There is no event, however unimportant it may at first appear, that is not able to exercise an influence upon the international money market, which, sensitive in the highest degree (depending as it does upon a thousand circumstances), sometimes changes its aspect many times a day.

This becomes especially apparent now that on the one hand the money markets feel more and more the influence of the gigantic developments that have of recent years occurred, and are to a certain extent still occurring in matters of trade and finance; while, on the other hand, when but a few months have elapsed since the signing of the treaty of peace between the United States of America and Spain, when the Philippine Islands have not yet fully acknowledged American rule, we have entered upon a fresh stage of the "Weltgeschichte" by the new and bloody struggle which, this time, takes place in the southern portion of the globe, and which will cause us to ask ourselves, more than once, what changes it is likely to bring about in the field of money, finance, and economics.

Now, in order to form a correct idea of the present condition of the international money market, and to account for the persistent rise in the different rates of discount and the sometimes violent fluctuations in the rates of exchange under which international trade has suffered in recent months, it becomes in the first place necessary to glance at the past, and to remember how confidence was successively shaken by the Baring crisis, the silver crisis, the Argentine, American, Portuguese, Greek, and Italian crises; how an almost unexampled economical depression was in this way brought about; and how money, falling continually upon lower and lower rates, was driven more and more to seek investment in national funds, municipal loans, and other securities paying a fixed rate of interest, while the quotations of these securities, frequently forced up to figures that were not always proportional to the financial position of the countries and municipalities concerned, gave, in their turn, rise to the conversions which of late years have been so frequent.

While this rage for conversion was extending over all the European markets, confidence, so essential to the revival of business, commenced slowly to return. The spirit of enterprise increased; and, as we so often find in the history of trade, the commercial equilibrium, which had been temporarily disturbed, was gradually restored, thanks to the natural genius and energy of mankind. Although the commercial world continued for a considerable time to suffer from the effects of the crises in North and South America, Australia, and so forth, other continents gave promise of becoming a fruitful field for the efforts of energetic and enterprising nations. These, seeing how, in consequence of the protective commercial policy of several States, the placing of their products upon a number of markets became more and more difficult, were not slow in perceiving the necessity of securing fresh outlets for their commerce and their constantly increasing industry. In this way Africa began gradually to be the point of attraction for various commercial nations. Realising that in this portion of the globe, with its innumerable treasures, they would be able to acquire in exchange for their manufactures, raw materials in vast quantities and at low prices, these nations established numerous commercial companies, built harbours, laid telegraphs, and vied with each other in the construction of railways, both for the expansion of their commerce and for political and military reasons. England built railways not only in Egypt and the Cape Colony, but also in the Soudan, in East Africa, and the Gold Coast. France followed suit in Senegambia, French Guinea, and Algiers, down to the Sahara. Belgium built the Congo Railway, which has already displayed such brilliant results; while Portugal connected Loanda with the eastern boundaries of her colony. In a word, down to the present time 19,126 kilometres are built in Africa, of which 6,220 by England, 4,935 by France, 793 by Portugal, 350 by Germany, 264 by Belgium, 960 by the Orange Free State, and 1,935 by the South African Republic.

But not only the Dark Continent, but also the Far East (after the signing of the treaty of Shimoneseki on the 17th April, 1895, had put an end to the war between China and Japan) promised to become a fruitful field for European trade and industry. Many commercial and manufacturing companies strove to stimulate the trade with the above countries, and to secure a regular market for their wares. In this praiseworthy endeavour they were energetically supported by their governments, which realised that a complete economic revolution had taken place in the Far East, and that, in the interest of their commerce and industry it had become essential that they should take advantage of this to the greatest possible extent, with a view to induce China in particular, which had for centuries held aloof from western civilisation, to emerge from her Oriental lethargy and to answer the call of Europe inviting her to open up the country to progress and civilisation. In a word, international trade realised that the treaty of Shimoneseki and the opening of more treaty ports would force the celestial empire to greater commercial development, that the moment had arrived to make true Li-Hung Chang's saying that China would, within fifty years, be covered by a network of railways.

Russia in particular realised the advantages which would accrue to her from the modified conditions of affairs, and in order to raise her prestige in the Far East, she enabled China to pay at once a portion of the war indemnity exacted by Japan, guaranteeing for that purpose a 4 per cent. Chinese loan of 400 million francs, which, with this guarantee, was easily taken up in France, thus making it possible for China to demand the immediate evacuation by Japan of some of the provinces occupied as a guarantee for the payment of the war indemnity. Moreover, Russia, with the co-operation of the French Haute Banque, created the Russo-Chinese Bank, with a capital of 6 million roubles, having its head office at Shanghai, and branches in all those parts of the world where Russo-Chinese industrial and commercial interests require it. Immediately after its establishment the new bank obtained from the Chinese Government the concession for building and working the Western Chinese Railway, which is to be connected with the Siberian Railway, which, when completed, will not only give Siberia, so rich in copper, coals, and other minerals, an outlet to the ocean, but which will also in a few years' time bring China and Japan within easy reach of Europe. But the Russian Government are not inactive elsewhere. They endeavour to promote an increase of trade between Russia and Persia, Turkistan and other neighbouring countries, instituting commercial establishments everywhere, building railways in every direction, establishing banks in London, Paris, Genoa, Rotterdam, and Salonica for the furtherance of Russian interests, and the development of the Russian grain trade.

Neither are they idle in Russia itself. Thanks to a prudent and able administration at home, to an avowedly pacific policy, and last, not least, to her loans, which have been fully subscribed in France, Russia has succeeded in placing her financial and monetary system upon a more solid basis, and neglects no opportunity of developing her industry and of turning to account the richness of her soil. In this endeavour she receives a lively support from France, and especially from Belgium. The latter has not failed to perceive the favourable results obtained by Russia in industrial matters; and, realising the difficulties which Russia's protectionist policy places in the way of the importation of Belgian goods into Russia, Belgian commerce has itself erected in different quarters of the great Muscovite Empire a number of industrial companies, several of which pay good dividends. According to a special report of Count Kondacheff there existed, at the commencement of 1899, no less than 105 undertakings of various kinds within the limits of the Russian Empire controlled by Belgian capital to the extent of 13,600,000*l.* In the past twelve months this amount has largely increased; in fact, at the end of August last, Belgian capital participated in Russian commercial undertakings to an extent of no less than 19 millions sterling.

But the Belgian spirit of enterprise did not end there. This little country, with her 6½ millions of inhabitants and her 11,373 square miles of territory, has found markets in other countries besides Russia; and while the great demand for coal and iron, her two principal natural products, has given rise to a gigantic development of her industry, Belgium takes an active share in the building of numerous railways and tramways in Spain, Italy, Persia, China, and elsewhere. Moreover she is working with might and main to develop and turn to account the vast Belgian Congo territory; she has established commercial agencies in London, Berlin, Frankfort, Elberfeld, and Basle, all working on behalf of Belgian trade and manufactures; while Antwerp, with its extensive commerce, especially with South America, with its eight regular lines of steamers to China, Japan, and the Straits Settlements, and its fifty-nine regular lines of steamers in all, has become one of the leading ports on the continent, one of the principal competitors of Hamburg.

Nevertheless, Hamburg, with its international trade dating back for centuries, with its branches and agents in every country, with its extensive shipping business, remains not only the principal commercial town in Germany, but the first port on the continent, ranking immediately after London. It is Hamburg which forms the most suitable place for the concentration of Germany's export trade, which, thanks to the zeal, energy, and knowledge of her business men, has made such marvellous progress in every direction. Never behindhand where it is a question of securing fresh fields of industry for her ever-increasing population, or new outlets for her constantly developing manufactures, Germany has not confined herself to an energetic course of action in the Far East. By means of a more moderate commercial policy, and of commercial treaties with her allies, Austria-Hungary and Italy, and with Russia and other friendly nations, she has succeeded in securing stability in the tariffs and regular markets for her products. Moreover, by the establishment of German banking institutions in countries beyond the sea, and of numerous lines of steamships which connect her with all parts of the world, she has contributed to the promotion of German trade abroad, and has, while building railways in Turkey, Egypt, and Brazil, covered Austria, Italy, and other countries with a net of electric railways. In a word, her influence and commerce are developing in all directions, and Germany is now the second commercial nation in Europe, an industrial State of the first rank.

While Austria-Hungary's trade and commercial development are also favoured by the treaties concluded with her political allies and with other countries, she continues to find it difficult to maintain her position among the leading commercial nations, first, because of the heavy taxation under which business suffers, and, secondly, because of the comparatively high freights which Austria, so far away from the principal European seaports, has to pay for the raw materials required for her manufactures. To this must be added the melancholy condition of her home politics, where race hatred and political passions play a leading part, and the difficulties which still stand in the way of the abolition of the forced currency, notwithstanding the fact that the gold required for this operation is lying in the vaults of the Austro-Hungarian bank. It is easy, therefore, to understand that Austria's commerce is not able to develop so effectively as in the case of other nations. Fortunately the position has improved during the last months. The people on the Danube have, at last, begun to realise that if Austrian commerce and manufactures are to keep pace with those of other nations, a much more energetic attitude will be called for; and stimulated by the example of Germany and Belgium, they are endeavouring to establish relations with countries across the sea, and Austrian agencies have been founded abroad, with the result that the exports, which for many years offered unsatisfactory figures, are now showing a considerable increase, thus turning the balance of trade more in favour of the Austrian Empire.

Turning to Italy, we find that her commerce and industry suffered long under the financial and monetary crisis which raged for many years on the peninsula, and which was so greatly intensified by the financial and commercial struggle with France which followed upon the revocation of the commercial treaty with that country in 1892. Of late years, however, Italy has made gigantic progress in every direction. Immediately after the revocation of the aforesaid treaty of commerce, Italy determined to put her shoulder to the wheel, in order to create fresh outlets for Italian produce and articles of manufacture, and to secure an honourable place amongst the commercial nations of the world. Italian commerce, guided by capable consuls and Italian chambers of commerce abroad, gives numerous evidences of energy in this direction, an energy which has, in many respects, been crowned with success. The conclusion of commercial treaties in February, 1892, with Germany, Austria, and Switzerland, all based upon moderate tariffs, added to the establishment of two powerful banking institutions at Milan and Genoa by the German, Austrian, and Swiss "haute finance," also played their part in bringing about this successful result. In a word, the position gradually improved, especially when the conclusion of a commercial treaty with France put an end to the commercial and financial struggle between the two sister nations. Thanks in particular to the zealous attitude of Genoa, Milan, Turin, Venice, and other cities, the Italian factories and ports afford a picture of great activity. In industrial matters Milan has more than once succeeded in triumphing over its foreign competitors; and in the shipping trade Genoa has proved a formidable rival to Marseilles, principally owing to the piercing of the St. Gothard Tunnel, which brings Genoa within 320 miles of Basle, that central point of Europe, while Marseilles is removed from it by 460 miles of railway. And the construction of the tunnel through the Simplon will still further decrease this distance. Genoa will then be less than 300 miles from Lausanne as against the 365 miles between Lausanne and Marseilles. Genoa, therefore, is preparing herself by the planning of new harbour works to cope with the large business which must inevitably follow the construction of the last-named tunnel, diverting, as it will, to Genoa and the Italian railways a large portion of the transit traffic now going *viâ* Marseilles and the French railways. Nor does Italy lag behind in matters of electrical traction, as will be seen by the following list of electric rail and tramway lines:—

	Length in Kilometres.		Number of Cars.	
	1897.	1898.	1897.	1898.
Germany	642·69	1138·20	1,631	2,493
France	279·56	396·80	432	664
Great Britain and Ireland	127·45	157·20	195	252
Italy	115·65	132·70	289	316
Austria-Hungary	83·89	160·50	194	243

Although Germany stands at the head, Italy shows satisfactory results, and since 1898 she has made very considerable progress, and now, as far as her electrical industry is concerned, occupies an important place among the commercial nations of the world. Nay, more: the country which gave birth to an Alexander Volta, to a Pacinetti, and other masters of electrical and electro-technical subjects, whose annual imports of coal amount to millions, has rightly understood the advantage of pressing her waterfalls into the service of electric traction, and thus replacing steam by electricity, effecting a considerable saving in coal.

Although the trade and navigation of France, suffering under the evil consequences of her protectionist policy (the tonnage of France has fallen from 711,742 tons in 1886 to 612,672 in 1898), has not developed to the same extent as would have happened had she followed a more moderate commercial policy; yet she too has recently made great progress in industrial, and especially in electrical, matters. Her industrial undertakings are continually supplied with work, thanks to the orders of the Government for the army and fleet; to the 1,657 kilometres of railway lines which the French Government has decided to lay down in Indo-China; and to the railway companies which, in view of the approaching International Exhibition, are renewing their rolling stock, supplying their trains with electric light, and building new lines between Paris and the suburbs; and to the network of electric tramways with which France is being gradually covered.

While her coal mines are displaying an unequalled activity, the manufacturers of Lille, Roubaix, and other industrial centres are making strenuous efforts to maintain existing markets and create new ones, and are supported in this by the French banks, especially by the Crédit Lyonnais and the Comptoir d'Escompte de Paris, so well represented on the London market. These, by their active policy in establishing numerous branches and agencies abroad, afford every facility to French trade with foreign countries. Add, moreover, the exports of articles de Paris, fashions, perfumery, and so on, in the production of all of which France still easily maintains the first place, and the trade in which has been materially increased by the introduction in London, New York, and other great cities of agencies of the principal Paris drapery establishments, and it will be seen that, besides the section of the French people mixed up with politics, intrigues, and conspiracies, there is a vast population devoting its energies to work and thrift. It is the result of these efforts which is mirrored in the figures which I will quote later, which shows the increase in the commercial turnovers in 1899, and which proves that France still maintains an important position among the commercial nations of the world. This position would without doubt undergo further notable improvement, if the efforts were successful which are now being made to return to the moderate commercial policy which led to her great prosperity under the reign of Napoleon III, and the application of which works so beneficially for the two sole champions of free trade, England and Holland.

The latter country is even going further than England; for while almost all the English colonies have adopted protectionism, the Netherlands, which, like England, are a free-trade country, have extended the principles of free-trade to all their colonial possessions, which include an area of 760,000 square miles and 32 millions of inhabitants. Rotterdam is the great competitor of Antwerp and Hamburg; the inward clearances of the three ports during the past five years have been as follows:—

	Rotterdam.		Antwerp.		Hamburg.	
	Ships.	Tons.	Ships.	Tons	Ships.	Tons.
1895....	5,199	4,177,478	4,653	5,363,569	9,443	6,255,718
'96 ...	5,904	4,951,560	4,951	5,820,669	10,477	6,445,000
'97 .	6,212	5,409.417	5,106	6,215,550	11,173	6,708,000
'98 ...	6,373	5,751,393	5,198	6,415,501	12,553	7,355,000
'99 ...	6,973	6,143,833	5,419	6,831,736	13.312	7,768,000

Thanks, then, to Rotterdam, to Amsterdam, with its large colonial and foreign trade, and to the progressing Twenthe (the Lancashire of Holland), the Netherlands are securing a foremost place among the commercial nations of the world.

As to England, the following figures will show the very active share which she has taken in the general commercial and industrial movement. With her well-organised monetary and banking system, England is the world's banker and cashier, the clearing-house of the nations. And as the foremost naval constructor in the world, with her extensive colonial and international trade, her flourishing industry, her innumerable lines of steamships which connect her with every quarter of the globe, she continues, in spite of the constant struggle forced upon her by her commercial rivals, to march at the head of the great commercial nations, and finds, in the excellent results of her turnover in 1899, the reward for the efforts, made by her sons, to maintain that position. Indeed, in addition to the great increase in her exports, the turnovers of her clearing-house of 9,150,269,000*l.* in 1899, as against 8,097,291,000*l.* in 1898, that is an increase of 13 per cent., show how great has been her activity. As for shipping, England is still far ahead of all other nations. Of the 3,503 vessels which in 1898 passed through the Suez Canal, 2,295 were British, as against 356 German, 221 French, 193 Dutch, 85 Austrian, 74 Italian, and 49 Spanish ships.

And when I speak of the great share which England has taken in the general commercial movement, I feel that the moment has come to make some mention also of Canada and Australia, those pearls in the crown of Great Britain. Canada has made great progress in every direction; Australia has not only entirely recovered from the building and banking crises of 1892-93, but is able to rejoice in a steady development of her commerce and industry, while Sydney, by opening its port on the 1st January, 1896, to the free entrance of the products of all nations, has succeeded in attracting a constantly increasing commerce, and promises to become one of the principal ports of the world, thus reaping its reward for the application of a sound commercial policy at a moment when so many countries are taking refuge in protection.

The constant development of commerce and industry which I have briefly sketched, naturally lead to the floating of numerous new companies, especially in Germany, Russia, and Belgium, and in a more moderate way in England, Holland, Switzerland, and Italy, until a perhaps not wholly unexpected event occurs, which necessitated for a short time a more restrained and prudent course. It is the entrance of the United States of America into international politics; it is the advent of a people still young, whose national and economic history extends scarcely a hundred years back, which after having made already gigantic progress after the presidential election of 1896, show since the conclusion of the war with Spain that they will not be content with reaping laurels on the field of battle, but that they desire to take an active part in the commercial struggle of the nations; that Europe will have to reckon with the competition of a country not only richly favoured by nature, but containing 77 millions of inhabitants, who give proofs of a fixed determination to play an important part in the world's trade. The wounds inflicted by the crisis of 1893, the losses incurred through an excessive paper and silver currency, seem to be forgotten. With unequalled energy America has taken rank among the great commercial nations of the world, and thanks to the indefatigable activity of her sons, thanks to her excellent consular system, America's trade and commercial relations are spreading in every direction, forcing upon Europe a continual struggle. Besides, blessed with prosperous harvests, which enable her to supply the ever-increasing population of Europe with grain, she does not permit our continent to make against these exports counter-exports of European manufactures and other produce, but by means of an excessive protectionist commercial policy she hampers the importation of all foreign goods. The result is, that her exports materially exceed her imports, and that, instead of an unfavourable balance of trade, which used frequently to cause shipments of gold to Europe, she has been able to repurchase the greater portion of her railway securities placed on the European markets, and after providing for the 75 to 100 million dollars spent annually by American tourists in Europe, and for the freights obtained by European, and more particularly English, ships for carrying American goods to Europe, to turn the rate of exchange in her favour. At a certain moment even America had not only large balances to her credit in London and Berlin, but was also one of the most important holders of English bills. In consequence of this favourable position, America is now seriously thinking of freeing her currency and banking system from the evils with which it is surrounded, and which contributed so greatly to the crisis of 1893; realising, at last, that for every commercial nation, and especially for a country that wishes to assume a dominant position in the commercial world, a sound currency and a sound banking system are matters of vital importance.

But while paying an unqualified tribute to the indomitable energy of the Americans, and while fully granting the marvellous progress made by them from every point of view, yet it seems to me, that at perhaps no very distant period we shall see that the application of so rigorous a protectionist policy will have unfavourable consequences for America herself; that by fostering the establishment of trusts and corners, prices have been inflated; in a word, that, as they did so often, the Americans also this time have gone too far. Between January, 1898, and June, 1899, no less than 487 new trust companies were formed, and fresh trusts are created daily.

It is useless to say that many of them lack a solid basis, and that we shall see in America, as we will see and have seen already in Europe, that not every company that is floated has necessarily a reason to exist.

Yet, whatever the future may bring in this respect, there is no doubt that of late years both sides of the Atlantic can point to excellent results in matters of commerce. On every side, the past few years have enabled us to see what can be obtained by the restless striving and genius of humanity. Everywhere the commercial interests of the nations become more and more predominant, everywhere it becomes more and more evident that commerce is the greatest of all interests, everywhere we see the nations endeavour to turn to account the produce of their soil, employing steam and electricity to develop their industry, to establish relations with unexplored regions of the globe, to secure their share of the world's trade.

Everything is in movement: railways, steamers, factories, harbours, docks; every one creates, every one works, and the years 1895-99 will be one of the most brilliant periods in the history of commerce, as will be seen by the following figures:—

Imports.

	1895.	1896.	1897.	1898.	1899.
	£	£	£	£	£
Great Britain	416,689,658	441,809,000	451,029,000	470,518,000	485,075,514
Germany	212,305,550	215,358,150	243,232,200	273,882,400	274,792,650
United States	160,333,869	136,315,911	148,519,000	126,733,000	159,966,924
France	196,000,000	152,153,160	158,241,080	175,047,800	168,686,000
Italy	43,973,637	43,710,099	44,133,287	52,345,753	56,000,000
Austria-Hungary	60,208,333	58,775,000	62,941,666	69,241,666	66,691,666
Spain	22,890,000	24,966,212	26,139,899	19,864,191	29,266,762
Belgium	67,216,000	65,795,560	71,781,680	77,103,680	84,314,600

Exports.

	1895.	1896.	1897.	1898.	1899.
	£	£	£	£	£
Great Britain	225,890,016	240,145,000	234,220,000	233,391,000	255,465,155
Germany	171,203,800	176,256,500	189,312,050	200,087,300	207,585,350
United States	164,972,023	201,167,448	219,941,800	250,985,000	255,097,328
France	183,560,000	136,036,800	143,918,080	140,126,680	155,965,680
Italy	38,433,614	38,970,287	40,434,601	44,576,640	52,962,962
Austria-Hungary	61,816,666	64,500,000	63,850,000	67,400,000	77.366,666
Spain	22,029,199	29,744,267	32,651,520	28,667,358	22,652,461
Belgium	54,416,000	57,088,800	61,921,080	66,104,440	70,895,880

It is evident that so gigantic a development of trade and industry could not remain without influence upon the position of the international money market.

In proportion as commerce and industry increased, there arose a greater demand for money, larger credits were required, the issue banks had to discount more bills, to issue more notes.

At first, however, their discount rate was not much affected by these demands. It continued for some time to be a moderate one; then while on the one hand large sums were constantly required for trade purposes, for the construction of numerous new railways, tramways, harbours, and for the building of new ships, on the other hand the ever increasing arrivals of gold from the Transvaal, Australia, &c., added to the regular production of the metal in America and Russia, enabled the issue banks to keep up a gold reserve adequate to their increased liabilities. Russia, Austria, and Japan succeeded not only in attracting, without the slightest disturbance of the international money market, sufficient gold for the introduction of their gold standard, but even in obtaining more gold than was absolutely necessary for that purpose.

The average rate of discount was only:—

	1895.	1896.
	Per cnt.	Per cnt.
In London	2·00	2·48
,, Paris	2·20	2·00
,, Amsterdam	2·50	3·02
,, Brussels	2·60	2·85
,, Berlin	3·15	3·65
,, Vienna	4·40	4·09

while the coin and bullion of the European issue banks amounted at the end of 1895 to 410 million £ (of which 314 million £ in gold), against a circulation of 654 million £; 1896, to 421 million £ (of which 318 million £ in gold), against a circulation of 583 million £, that is a proportion of gold to notes of 48·01 per cent. and 54·04 per cent.

But already in 1897 there were certain signs that money would gradually become dearer. Then, except France, whose business was still suffering under her protectionist policy, trade became more active in England, Germany, Belgium, &c., there was an advance in wages, in the price of raw materials, and the average rate of discount—

	Per Cent.		Per Cent.
In London .... was over	$2\frac{3}{4}$	In Berlin .... over	$3\frac{13}{16}$
,, Brussels	3		
,, Amsterdam .... over	$3\frac{1}{8}$	,, Vienna	4

while the coin and bullion of the European issue banks amounted at the end of 1897 to 451 million £ (of which 350 million £ in gold), against a circulation of 610 million £; that is, a proportion of gold to notes of 57·37 per cent.

In 1898 the position of the issue banks was already somewhat weaker. Their coin and bullion represented only 427 million £ sterling (of which 328 million £ in gold), against a circulation of 586 million £—that is, a proportion of gold to notes of 55·97 per cent., while their average rate of discount was—

	Per Cent.		Per Cent.
In London	3·26	In Brussels	3·04
„ Paris	2·20	„ Vienna	4·16
„ Amsterdam	2·75	„ Berlin	4·28

In 1898 it had become still more evident that the immense development of commerce and industry, the floating of numerous new companies, the rise in raw materials, freights, wages, &c., would exercise great influence upon the position of the international money market, that dearer money was to come, that a stringency in the money market was only a question of time.

By-and-bye it also became clearer and clearer that Europe had taken a heavy task upon her shoulders in undertaking to supply the money needed for the realisation of her aforesaid programme with reference to Africa and China: a heavy task indeed to supply those regions with all that is required to construct railways, tramways, harbours, telegraph lines, &c., to bring new mines into working order, to furnish existing ones with new machinery. And although some of the constructed African railways already showed satisfactory results, and paid regular dividends, although a large number of mines showed increased returns of gold, and in some cases paid excellent dividends, these remittances reduced to a certain extent the indebtedness of Africa to Europe, but were not proportionate to the constant and varied requirements of the Dark Continent. Moreover, Europe was not only obliged to act as banker for Japan and China, by taking over Chinese and Japanese loans of considerable amounts, but also to advance the money required for the building of new steamers to connect China and Japan with Europe, and of numerous railways, and for the exploitation of various mines for which concessions had been granted by the Chinese Government. According to the report of the Compagnie Universelle du Canal Maritime de Suez, no less than 61 new ships, measuring 190,000 tons, passed through the canal in 1898; while, according to official figures, different European and American groups and syndicates are engaged in China with the construction of some 6,000 miles of new railways, of which so far only 70 to 80 miles are in regular working order. And although everything tends to show that international trade will in the coming years be richly rewarded for its energetic efforts in the Far East, in the meanwhile Europe has to lay out considerable sums of money at a time, when she is already a debtor to a considerable extent *to* America for the wheat, iron, copper, &c., she had to import for her population and for her industry, without being able to pay her debt in manufactured goods or other articles of trade. On the contrary, she has in every respect to struggle with a more and more powerful competition on the side of America upon nearly every market, and especially in the Far East. The reports of several consuls leave not the smallest doubt in this respect.

This constant expenditure of money in distant quarters of the globe, added to the remittances that had to be made to the Argentine Republic for wool, and Brazil for coffee, and to the large requirements of home trade and consumption, ended by creating in Europe an almost unequalled demand for gold and money; and this demand increased considerably when, in October, 1899, the war broke out in South Africa, through which, not only Europe is temporarily deprived of the hitherto constantly increasing imports of gold from the Transvaal mines, but even the English African banks had to export gold to their branches at the Cape, in order to strengthen their position, and to enable them to meet eventual increased demands from their customers, while gold was also needed by the Government for the payment of troops and other war purposes.

At the end of August, 1899—that is to say, nearly six weeks before the outbreak of hostilities—the official rate of discount of the—

	Per Cent.		Per Cent.
Bank of England was	$3\frac{1}{2}$	Netherlands Bank	$4\frac{1}{2}$
National Bank of Belgium....	$3\frac{1}{2}$	Austro-Hungarian Bank	$4\frac{1}{2}$
Bank of France	3	Imperial Bank of Germany	5

while the coin and bullion of the European issue banks amounted to 443 million £ sterling (of which 335 million £ in gold), against a circulation of 571 million £; that is a proportion of gold to notes of $58\frac{5}{16}$ per cent.

At the end of September, that is a few days before the outbreak of hostilities, the money market was already upset by the grave rumours that were circulating, but no change had come in the monetary situation. The official rate of discount in London and Brussels remained at $3\frac{1}{2}$ per cent.; in Paris at 3 per cent.; in Amsterdam at $4\frac{1}{2}$ per cent., and in Berlin at 5 per cent.; Vienna alone, in consequence of the unfavourable position of the Austro-Hungarian money market, brought about by a sharp fall on the Austro and Hungarian Bourses, and by several failures as well as by the commercial and financial crisis that reigned in the Balkan States, so intimately connected with Vienna, had been compelled to raise its rate of discount from 4½ to 5 per cent., while the coin and bullion of the European issue banks had been slightly reduced to 435 million £ sterling (of which 328 million £ in gold) against a circulation of 575 million £, that is a proportion of gold to notes of 57·05 per cent.

But early in October the position displayed a remarkable alteration. War seemed inevitable. On the 3rd October the Bank of England raised its rate of discount to 4½ per cent., and again on the 5th October to 5 per cent., while the Imperial Bank of Germany raised its rate on the 3rd October to 6 per cent.; the Austro-Hungarian Bank on the 5th October to 6 per cent.; the Netherlands Bank on the same date to 5 per cent.; the National Bank of Belgium to 4 per cent., and while the coin and bullion of the European issue banks amounted on the 7th October to 424 million £ (of which 319 million £ in gold), against a circulation of 595 million £, that is a proportion of gold to notes of 53·61 per cent.

On the 9th October, when war was virtually declared, although the time fixed by the Boers for compliance with their ultimatum expired only at the 11th October, the gold and silver stock of the principal European banks of issue, their bank rate, the rate of exchange on London, and the price of the different Government stocks of the various countries of Europe and at the same period in 1898 were as shown in the table on p. 16.

But if, in consequence of the war, the international money market is temporarily deprived of a regular and important supply of gold, it would not be correct to ascribe to this reduced supply of gold exclusively the stringency of the money market. As I have already shown, the rise in the price of money did not begin in 1899. It went hand-in-hand with the gigantic development of trade and industry which has now continued for the past five years, and it has advanced each year in almost every country. Especially in October, 1899, it became evident that the requirements of commerce and industry were much greater than in former years, that in consequence of the continual rise in the prices of raw materials, articles of consumption, wages, &c., more capital was needed, that the issue banks had to face unusually large demands for discounts involving an increase in their circulation at the very time that their gold reserve was commencing to show a decrease. This decrease arose not so much from the general struggle for gold amongst the banks themselves, although already, in view of the uncertainty of the political situation, every bank was striving to acquire as much as possible of the international metal par excellence (gold), but more particularly

Table comparing the Gold and Silver Stock of the principal Banks of Issue, their Bank Rate, the Rate of Exchange on London and the Price of the different Government Stocks of the various Countries of Europe in the First Week in October, 1899, *and at the same period in* 1898.

	Gold. First Week in October,		Silver. First Week in October,		Bank Rate.		Rate of Exchange on London (Cheque).		Price of Government Stocks.	
	1898.	1899.	1898.	1899.	8th October, 1898.	7th October, 1899.	7th October, 1898.	7th October, 1899.	8th October, 1898.	7th October, 1899.
	£	£	£	£	Per cent.	Per cent.				
England	31,747,000	32,693,000	—	—	3	5	—	—	109¾	103½
									(consols)	
Germany	36,304,000 (coin and	34,350,000 bullion)	—	—	4	6	20·40½	20·50½	94·40	87·80
									(three per cent.)	
France	74,321,000	76,580,000	45,489,960	47,305,000	2	3	25·29½	25·34	102·30	100·45
									(three per cent.)	
Russia	89,903,000	88,075,000	5,145,000	4,884,000	5½	5½	93·80	93·70	103·00	100⅛
Balances abroad	1,750,000	1,759,000					(3 months)		(four per cent.)	
Austria-Hungary	29,339,916	29,630,000	10,439,500	10,540,000	4	6	12·02	12·11½	120·60 (Austrian four per cent.)	117·40
Foreign gold bills	1,169,691	1,106,000							120·05 (Hungarian four per cent.)	116
Italy	11,211,370	11,200,000	2,730,518	1,425,000	5	5	27·33	27·24	91⅛	91
Foreign gold bills	2,637,296	3,400,000							(five per cent.)	
Holland	4,313,416	2,742,000	6,694,666	5,930,000	2½	5	12·09¼	12·11¼	97¼	92⅜
Foreign bills	633,250	522,000							(three per cent.)	
Belgium	3,688,000 (coin and	3,436,000 bullion)	—	—	3	4	25·34½	25·40½	100·20	97·50
									(three per cent. 2nd série)	
Foreign bills	4,683,600	3,960,000								
Spain	10,930,000	13,430,000	5,260,000	13,830,000	5	4	37·87	31·30	43·40	60⅛
Foreign correspondents	7,322,000	3,202,000							(sealed bonds)	

from the requirements of the home consumption. Then the great development of trade and industry had affected not only the principal markets, but also gradually exercised a more direct influence in the provinces. True, thanks to the establishment of numerous bank branches in the provinces, the bulk of the transactions were made there too in cheques or by transfers from one account to the other, but there are still many transactions for which a payment in gold is necessary. This is especially the case in England, where no one can be compelled to accept more than 40*s.* in silver, and as the smallest notes of the Bank of England are for 5*l.*, the bank always exchanges its notes for gold, so that it does not even keep a stock of silver to any considerable amount, although the bank, by the Bank Act of 1844, is authorised to hold an amount of silver equal to one-fourth of its gold reserve. In Germany no one is obliged to accept silver above 20 marks, and there too, notwithstanding that payments are made by cheques and particularly by transfers through the Imperial Bank of Germany from one account to the other, the great development of trade and industry has occasioned ever-increasing requirements on the part of the internal trade. It has appeared in England and Germany, in which the development of trade and industry has been greatest, that the decrease in their stock of gold has not only been the result of the gold exports, arising from unfavourable rates of exchange, but also, and to a considerable extent, of the requirements for internal account, especially in the manufacturing districts, where the rise in the price of wages, and raw materials, has brought about greater demand for money and gold, which in England has been further increased by the extensive preparations for the war (equipments of transports, movements of troops, orders of all kinds, and so forth).

According to official statistics England imported from 1st January till the end of November, 1899,

	£		£	
	30,535,075	gold against	41,469,773	in the same period in 1898.
And exported	20,080,087	,,	32,131,541	,,
Leaving a balance of	10,454,988		9,338,232	

The Bank of England received in 1899 7,379,000*l.* more gold than it exported, while the coin and bullion of that institution was on 3rd January, 1900,

	£	
	32,126,276	
Against	30,340,823	on the 4th January, 1899.
	1,785,453	

The above figures, therefore, show that large amounts have been absorbed by the internal circulation. On the other hand, it should not be forgotten that several London banks have begun to provide important reserves of bullion and sovereigns.

Of the above-mentioned 30,535,075*l.*, the Transvaal mines supplied 14,998,711*l.* Frequently gold went direct from the Transvaal o Germany, which, like England, imported more gold in 1898 and 1899 than it exported.

It was expected that the production of gold by the Rand would amount in 1899 to about 20 millions sterling. But the closing of a large number of mines has of course upset these calculations. Up to 30th September, 1899, 4,101,000 ozs. had been produced, equal to 15 millions sterling. Some few mines continue to produce gold, but, as is known, this gold does not, for the present, reach Europe. On the contrary, in the month of November, 4,220,502*l.* gold were exported to South Africa.

Thus, temporarily, deprived of an important and regular supply of gold, and faced with great requirements on the part of commerce and industry, increasing demands for discount, and a constant withdrawal of gold for internal circulation, the position of the principal issue banks was continually weakened, and several of them had to raise again their rate of discount. On 30th November, the Bank of England was obliged to raise its rate to 6 per cent. (a figure at which it had not stood since the Baring crisis), the Imperial Bank of Germany, on 19th December, to 7 per cent., while the Bank of France raised its rate of discount to 3½ per cent. on 7th December, and to 4½ per cent. on 21st December, 1899. The position, in a word, began to look anything but *couleur de rose*, and it did not improve when in America, where the incessant establishing of trusts and over-capitalisation of industrial companies, gave rise to an unsound state of affairs, a crisis seemed inevitable. Money there rose one day to 186 per cent., and, as a leading financial paper stated, "there was absolutely "not one cent obtainable on the Stock Exchange either at that "rate or any other." But thanks to the concerted and energetic attitude of the New York banks, and to the announcement made by the Treasury department, that deposits of internal revenue would be allowed to remain in the banks to the value of 40 or 50 million dollars, the American money market gradually returned to normal conditions, and the crisis which, when several failures took place in New York, Chicago, &c., threatened to assume large proportions, was overcome. At the end of December the position had even so much improved, that when the rate of exchange on London in New York reached the gold point, America was able to export several millions of gold to London, the Bank of England, in order to strengthen its position, which had been weakened in consequence of large exports of gold to South America for wool supplied to Europe, having favoured the importation of American gold by raising its price for gold bars and American eagles, and by advancing the money for fourteen days at 2½ per cent.

The high level of the rate of exchange on London at New York, to which I have just referred, should give no ground for surprise. True, America's exports during the last five years have considerably exceeded her imports, as will be seen from the following table:—

[000's omitted.]

	From 30th June to 30th November.		Balance of Exports over Imports.
	Imports.	Exports.	
	$	$	$
1895........	347,867,	345,466,	2,402, (excess of imports)
'96........	252,943,	444,039,	191,096,
'97........	238,283,	484,887,	246,604,
'98........	253,565,	496,154,	242,589,
'99........	343,966,	559,171,	215,215,

But on the other hand we must not forget that America, although she has bought back the greater part of her railway securities, still has to remit considerable amounts to Europe for dividends and for interest on the securities still held here, that American tourists spend every year large sums in Europe. Besides the freights which European ships, more particularly English bottoms, obtain in America, are also an important factor. All these items taken together represent millions and millions of dollars, which naturally reduce our debt to America for grain, iron, copper, &c.

Moreover, we must not lose sight of the fact that although America intends to place her currency and banking system on a sound basis (the currency Bill is already under discussion in the Senate), she still suffers under an unsound currency system in which paper money and silver play a prominent part. On 1st December, 1899, the circulation of America was composed as follows:—

	Amount.*	In the Treasury.	In Circulation.
	$	$	$
Gold	876,323,402	248,843,301	627,480,101
Silver dollars	482,622,376	404,389,922	78,232,454
Subsidiary silver	79,510,349	3,187,384	76,322,965
Greenbacks..........	346,681,016	28,869,040	317,811,976
Treasury notes	89,026,280	1,584,600	87,441,680
Notes of the national banks....	243,842,068	4,006,282	239,835,786
Gold certificates.........................	174,896,119	23,987,917	150,908,202
Silver ,, ...	400,643,504	6,350,704	394,292,800
Mint ,, ...	3,695,000	90,000	13,605,000
Total	2,707,240,114	721,309,150	1,985,930,964

* It was an error in the printing of the heading of this table in the rough proof circulated at the meeting, which drew one of Mr. Barr-Robertson's criticisms in the discussion (*vide post*, p. 37.—ED.)

Now, if we remember, that, according to the law of Gresham, the good metal is always driven away by the bad one, we cannot be surprised that with a circulation where silver and paper money play such an important part, the rate of exchange on London, representing exclusively gold, has slowly but regularly moved in the direction of the gold point, notwithstanding America's balance of trade has been during the last years decidedly in her favour. The recent large shipments of gold from New York to London could have been explained when London quoted higher rates for money than New York, or when Berlin, through London, sold thousands of American securities, but now that the rate of money in London is considerably under New York, now that Berlin is no more a seller but rather a buyer of American shares, the continuation of gold shipments from New York to England can only be ascribed partly to the inducements offered by the Bank of England, mentioned before, but especially to the mass of paper money and silver which form such a prominent part of the American circulation, and which have driven away the good metal—the gold. It may be, when America finally reorganises her currency system in accordance with the requirements of a great commercial nation, that the rate of exchange on London will turn in favour of America, that the gold received from the United States will have to be repaid, especially when the balance of trade continues to be in her favour. But in the meantime it has gone far to enable the Bank of England to strengthen her position, and to improve the position of the international money market, as is proved by the reduction in the rate of discount of the Bank of England on the 11th January to 5 per cent., and to 4 per cent. by the Bank of France.

But it was not from America alone that the Bank of England succeeded in obtaining gold. From Germany also, gold was imported. During the last two years the rate of exchange on London in Berlin has nearly constantly been in favour of England, notwithstanding that money during the greater portion of 1898 and 1899 was quoted at higher rates in Berlin than in London. In fact, the rate of discount of the Imperial Bank of Germany has more than once exceeded the official rates of other issue banks, and it is not too much to say that there is no country where in the last five years money has been so much wanted as in Germany. The weekly returns of the Imperial Bank of Germany, the increase in the circulation of bank notes and in the amounts of bills discounted show this only too clearly. In 1895 the average rate of discount was 3·15 per cent., in 1896 3·65 per cent., in 1897 over 3·80 per cent., in 1898 over 4·25 per cent. in 1899, 5 per cent. Already in 1897 the official bank rate was 5 per cent., and from 19th November, 1898, to 14th January, 1899, one of 6 per cent., and although at this date it was reduced to 5 per cent., on 20th February to 4½ per cent., and on 9th May to 4 per cent., this greater ease was only temporary. More and more, it became evident that the great development of trade and industry, the numerous issues of industrial, especially electrical companies, and of Government, provincial and municipal loans, were bound to lead to higher rates of discount. Already on 19th June the Imperial Bank of Germany was obliged to raise its rate to 4½ per cent., on 7th August to 5 per cent., on 5th October to 6 per cent., and finally on 19th December to 7 per cent.

During the war between Prussia and Austria the Bank of Prussia (then the leading issue bank in Germany) had to raise its rate to 7 per cent., and ten days later to 9 per cent. On the outbreak of the war between France and Germany, on 18th July, 1870, it raised its discount rate to 8 per cent. But, since the existence of the Imperial Bank of Germany, which began its operations in 1875, never a 7 per cent. had been necessary, and although till now, Germany's trade and industry have not been much affected by such a high rate, there is no doubt that in the long run it would exercise a baneful influence on business.

Germany has of late years worked too much with foreign money. More than once, England, America, France, and other countries, in view of the high rates obtainable in Germany, have invested large sums in German bills or have lent money to the German bourses, money that was naturally withdrawn as soon as it could be employed on nearly equal terms at home. It is this withdrawal of foreign capital, especially at a moment when money was already much wanted in Germany, that has contributed not only to the stringency on the German markets, but also to create unusual large demands for bills on London, Paris, Amsterdam, &c.

In 1899 the rate of exchange in Berlin on London, Paris, and Amsterdam, was as follows:—

	London.		Paris.		Amsterdam.	
	Short.		Short.		Short.	
	Highest.	Lowest.	Highest.	Lowest.	Highest	Lowest.
January	20·42	20·40	81·15	81·00	168·80	168·60
February	20·415	20·395	81·15	80·95	168·75	168·40
March	20·40^{5}	20·40	80·95	80·85	168·40	168·10
April	20·43^{5}	20·40^{5}	81·10	80·95	168·55	168·20
May	20·45	20·42	81·15	81·05	168·35	168·35
June	20·44	20·415	81·10	81·05	168·35	168·10
July	20·48	20·41	81·19	81·05	168·80	168·15
August	20·49	20·44^{5}	81·20	81·00	169·05	168·70
September	20·45	20·43	81·00	80·80	169·00	168·60
October	20·48	20·425	81·00	80·90	169·50	168·95
November	20·43	20·41	81·05	80·85	169·50	169·15
December	20·56^{5}	20·44	81·75	80·95	169·45	169·20

As will be seen from the above figures, the rate of exchange in Berlin on London, Paris, and Amsterdam did not go down for one single day to a point which would make it profitable to send gold from England, France, and Holland, to Germany. On the contrary, the rate of exchange has several times reached the point at which gold exports from Germany to England, France, and Holland were possible, and, in fact, lately gold has been exported to London and Amsterdam. This gold, however, was principally taken from the internal circulation. Not that the Imperial Bank of Germany refuses gold for export. In Berlin it always pays its banknotes in gold, and in the provinces so far as the stock at its branches will permit. But the Berlin banks and bankers decline to export the national gold. So that, when the rate of exchange on London reaches the gold point, gold has to be taken from the internal circulation. This requires time, especially when large amounts are wanted, and so we saw in December, when Germany had to pay considerable sums in London, that the price of cheques on London in Berlin and Hamburg exceeded the point at which it would have been cheaper to export gold to London. Even so high a price as 20·60 was paid, that is nearly $\frac{1}{2}$ per cent. above the gold point. At that moment the German currency was therefore what the Germans call "entwerthet." In other words, the German banknote was quoted at a discount.

One can readily understand that in the present strained conditions of the German money market the Berlin banks wished to avoid a higher bank rate, which certainly would be applied if the Imperial Bank of Germany had to face large withdrawals of gold, but on the other hand it may be permitted to ask if it is a wise policy, when Germany's greatest commercial rivals and competitors, England and America, at all times meet their international liabilities in gold, when neither London, New York, nor Amsterdam ever refused gold for export, if it is in the interest of Germany's trade and industry to give international trade the slighest pretext to doubt whether the German currency is really established on a gold basis, whether the rise of the rate of exchange of bills on London, Amsterdam, &c., can be kept within certain limits? This is not all. Germany has constantly to import food-stuffs for her ever-increasing population, and raw materials for her industry. A high rate of exchange, therefore, can be no matter of indifference to a country suffering already under a 7 per cent. bank rate, and having to pay much higher wages than before (during the last eleven years wages have increased in several industrial districts between 25 and 30 per cent.). It means another increase in the cost of production, in the cost of living, and if really the German bankers wish to avoid gold exports, they ought to exercise greater moderation in their stock exchange dealings, in the introduction of foreign treasury bills and foreign loans, and reduce to a great extent the flotation of so many industrial companies. A 7 per cent. bank rate and a rate of exchange of 20·60 speak volumes in this respect.

But also the fact that Germany had not completed entirely in 1873 her monetary reform, is to a certain extent responsible for the state of things. Instead of at that time, when adopting the gold standard, getting rid of her silver thalers, Germany, frightened by the heavy loss (96^6 million marks) on the sale of the first 7 million £ sterling silver, suspended in 1879 all further sales. The result was that the thalers, not much liked by the public, as being too heavy, flowed principally to the Imperial Bank of Germany.

The *average* silver stock of that institution was:—

[000's omitted.]

In	Thalers, representing	Fractional Currency, representing	Total.
	Marks.	Marks.	Marks.
1894	221,525,	93,193,	314,718,
'95	217,148,	90,056,	307,204,
'96	204,066,	85,913,	289,979,
'97	198,566,	81,283,	279,849,
'98	189,099,	78,551,	267,650,

while the total gold and silver stock of the bank was:—

On 31st December.	Million Marks.
1894	1,014^2
'95	853^1
'96	804^6
'97	826^5
'98	752^3

in other words, more than one-third of the coin and bullion stock of the Imperial Bank of Germany is composed of silver.

A Bill has been introduced into Parliament to re-coin into fractional currency 300 million marks out of the 360 million marks in thalers still on hand, and to sell the remaining 60 millions. By this the bank will get rid of a large amount of silver, and be able with the proceeds of the above 60 millions to strengthen her gold reserve, which amounted on the 31st December, 1899, to 25^2 million £, the total amount of her coin and bullion being 35^4 million £.

In 1899 the Imperial Bank of Germany was obliged to exceed twenty times the legal maximum of her uncovered circulation of banknotes free of tax, against sixteen times in 1898, nine times in 1897, and six times in 1896. That legal maximum was, when the Imperial Bank was created on the 14th March, 1875, fixed at 250 million of marks, on condition that whenever any of the other thirty-two issue banks (entitled to issue 135 million of marks) renounced such right, it should be transferred to the Imperial Bank of Germany. Twenty-five of those banks having renounced their right of issue, the Imperial Bank of Germany was authorised to issue uncovered notes up to 293^4 millions of marks. Every amount issued by the bank in excess of that limit is subject to a Government tax of 5 per cent. This system differs entirely from that applied by the Bank of England, as according to the Bank Act of 1844, the Bank of England must hold gold for every banknote issued beyond the legal maximum (now 16,800,000*l.*), whilst the Imperial Bank of Germany can issue any amount of notes beyond the legal maximum, provided the bank pays to the Government a tax of 5 per cent.

But since the creation of the Imperial Bank of Germany in 1875, trade and commerce have developed in a remarkable manner. Every branch of industry, commerce, and shipping has immensely increased, whereas the maximum fixed for the uncovered paper currency, free of tax, is still the same; then only from 1st January, 1901, the maximum will be raised to 400 millions of marks. When the transformation into fractional currency, and the sale of a considerable amount of its thalers has taken place, and the increase of the maximum of its uncovered paper circulation free of tax comes into force, the Imperial Bank of Germany will then be in a much stronger position, and able to grant on a larger scale than before the facilities required by trade and industry.

France also has been unable to maintain the rise of the rate of exchange on London, &c., within certain limits. The Bank of France, in spite of her gold reserve of 75 million £, does not always give gold for export. It has lately sold a portion of its foreign gold, but it cannot be maintained that one can rely upon the Bank of France for the delivery of large amounts of gold. There is a constant doubt as to its gold policy. At one time it only sells gold against a constantly fluctuating premium; at another it stipulates special conditions or pays gold only to its customers, but a fixed policy with regard to the delivery of gold does not exist. So that, when the rate of exchange on London in Paris reaches the gold point, gold has to be taken from the internal circulation, which means delay, expenses, &c., and explains how cheques on London in Paris at one moment in December where quoted 25·40, although an export of gold from Paris to London is already possible at 25·32.

One of the principal reasons why the Bank of France clings so tenaciously to its gold, is the unsettled political situation, which makes the French Government, so closely connected with the Bank, anxious that the first institution of the country, the institution which, so to say, represents the national credit, should, in the event of political complications, be able to dispose of a considerable stock of gold. But also the constant increase of her circulation of banknotes compels the Bank not to part lightly with its gold, especially as its gold reserve has lately not kept pace with its circulation, which reached:—

	Mln. frs.		Mln. frs.
On 4th January, 1900	4,163	an amount never reached before, against a gold reserve of	1,865
On 5th January, 1899, the circulation was....	3,944	as against a gold reserve of	1,811
Difference	219	....	54

In other words, the gold reserve has increased since 5th January, 1899, 54 millions in gold, whilst its circulation increased 219 millions.

Under these circumstances one can easily understand that the Bank of France does not like to lose its gold. The Government has already been obliged to raise the legal maximum of the bank's circulation, first from 3,500 to 4,000 millions, and in December, 1897, to 5,000 millions of francs. In order to strengthen its reserve, the bank is constantly endeavouring to withdraw gold from the internal circulation, but whenever the rate of exchange on London reaches the gold point, it has to deal with the competition of those who watch carefully the tendency of the foreign rates of exchange, and export gold as soon as there is a profit.

To turn to Russia, the State Bank of that country, thanks to the favourable results, politically and financially, obtained by the Russian Government, and also to the loans placed in France, Germany, and Holland, is able to dispose of more gold than any other issue bank. Its gold reserve is considerably in excess of its circulation of bank notes, a very unusual position, and the more remarkable in view of the fact that since the introduction of the gold standard Russia has had to contend with bad harvests (as for instance those of 1897 and 1898), reduced exports, and recently with an acute crisis on the stock exchange. But M. Witte, the Minister of Finance, who so ably carried through the transition to the gold standard, has, hitherto, succeeded in triumphing over every obstacle. Whether the Russian State Bank will in the long run be able to protect its gold against export, is another question, as the rate of exchange at St. Petersburg on London, which has been for a long time in favour of Russia, has lately turned against that country. In December the quotation was 93·40 for three months, which corresponds to a rate for cheque of 94·80, permitting the export of gold to England. In order to prevent this, the State Bank raised its rate of discount to 7 per cent.

The Bank could have easily given up a portion of its gold without weakening its position or acting contrary to the Bank Act, which stipulates that so long as the circulation of the Bank does not exceed 600 million roubles, one half of the notes issued must be covered by gold. If the circulation exceeds 600 millions, every note issued above that figure must be represented by gold. Now, according to the bank return of 23rd November, 1899, the circulation was 529,720,000 roubles, requiring only a gold reserve of 264,860,000 roubles, while that reserve was 863,675,000 roubles, in other words, the circulation was covered by gold to the extent of 163 per cent. In the presence of such a position the notes of the Bank do not deserve that name. They would be better designated as metallic deposit certificates, for, covered to such an excessive extent, they do not fulfil the object for which bank notes are created, an object I think I need not explain to the Fellows of this Society.

But the Russian Government appears to be firmly determined not to part with its gold, not only in view of eventual political complications, but also because Russia—her whole policy proves it—wishes to play a leading, or rather the leading part, in the Far East, and to become in those regions the cashier and the banker of the Far East. To attain that position, the State bank has to be strong, has to dispose of an enormous amount of gold. Moreover, the great Trans-Siberian Railway is gradually approaching its completion, the connection between the West and the Far East will then make rapid strides, and for the commercial and industrial development of Russia, and especially Siberia, which will naturally ensue, Russia must be prepared in time. On no pretext may she weaken her present favourable position; she must be entirely independent of the international money market, and remain strong, especially now that her gold production is not showing the brilliant results of former years.

	kilograms.
In 1893 this production amounted to........	39,684
„ '94 „ „	37,540
„ '95 „ „	36,114
„ '96 „ „	46,553
„ '97 „ „	32,408
„ '98 „ „	37,227

As to Italy, Spain, Roumania, Portugal, Greece, Bulgaria, and Servia, the issue banks of these countries hold more or less considerable amounts of gold, but wrestling as do these countries with constant deficits, forced currency, and a premium of gold, they cannot bring any gold into circulation, it would at once be exported. The gold therefore lies idle in the vaults of the banks; it is, so to say, imprisoned.

Of all the continental countries, Holland is the only one where gold can be obtained without difficulty. The Netherlands Bank never refuses gold for export. Holland in this respect stands on a level with England. The two nations of freedom and free trade, are the only two which place no obstacle in the way of the export of gold, they are the only two nations which permit gold to answer its real purpose, to circulate freely.

I now give you different tables showing the position of the European issue banks on the 31st December, 1899, fluctuations in the rate of exchange during 1895-99, and variations in the rate of discount in 1899.

I have now reached the end of my task, and it remains for me to thank you for the kind and undivided attention with which you have followed me. It is obvious that each of the subjects which I have treated deserves a further and more detailed examination. Then economic, financial, and monetary questions have become so prominent lately, they occupy such an important place in the history of nations, that they cannot be too carefully examined; but I have already taxed your patience to excess, and troubled you with many figures. Yet I have tried to bring some interesting matters before you in as popular and clear a manner as I could, and if I have succeeded in explaining to you the present position of the international money market, I shall consider myself fully rewarded for the time and pains I have bestowed upon my task.

APPENDIX.

Table I.—*Averages of the Bank Rates of the Principal European Issue Banks.*

Bank of	1895.	1896.	1897.	1898.	1899.
England	2·00	2·48	2·78	3·26	3·75
Germany	3·15	3·65	3·84	4·28	5·00
France	2·20	2·00	2·00	2·20	3·10
Russia	5·00	6·05	5·87	5·27	5·60
Austria-Hungary	4·30	4·09	4·00	4·16	5·05
Holland	2·50	3·02	3·14	2·75	3·84
Belgium	2·60	2.85	3·00	3·04	3·95
Italy	5·00	5·00	5·00	5·00	5·00
Spain	4·60	4·78	5·00	5·00	4·60

Table II.—*Bank Rates of the principal European Issue Banks.*

Bank of	1895.		1896.		1897.		1898.		1899.		1900.
	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. cut.
England	2	2	2	2	4	2	3	2½	4	3	6
Germany	3	3	4	3	5	3	5	4	6	4½	7
France	2½	2	3	3	2	2	2	2	3	3	4½
Russia	6	6	6½	6½	6	6	6	5½	5½	5½	7
Austria-Hungary	4	4	4	4	4	4	4	4	5	4½	5½
Holland	2½	2½	2½	3½	3½	3	3	3	2½	3	5
Belgium	3	2½	2½	3	3	3	3	3	4	4	5
Italy	5	5	5	5	5	5	5	5	5	5	5
Spain	5	4½	4½	5	5	5	5	5	5	5	4

TABLE III.—*Table of the various Rates of Exchange on London.*

In	1895.		1896.		1897.	
	1st January.	1st July.	1st January.	1st July.	1st January.	1st July.
Amsterdam........ (cheque)	12·07	12·10¾	12·13¾	12·09¼	12·10	12·07½
Berlin .... („)	20·39	20·43½	20·48	20·39	20·40	20·37
Brussels .... („)	25·19	25·23	25·26	25·17½	25·26	25·14½
Lisbon................ („)	$42\frac{1}{16}$	$42\frac{3}{16}$	41¾	41¼	38¼	36·00
Madrid .... („)	25·25	29·13	30·55	29·68	31·65	32·68
New York (cable transfers)	4·89	4·90	4·89¾	4·88½	4·87	4·87½
Paris .... (cheque)	25·15	25·19½	25·22½	25·15½	25·23	25·10
Rome .... („)	26·83	26·24	27·53	26·90	26·37½	26·23
St. Petersburg (3 months)	96·65	92·90	94·00	94·05	93·45	93·85
Vienna .... (cheque)	12·42	12·11	12·07	11·99	11·99½	11·95

In	1898.		1899.		1900.
	1st January.	1st July.	1st January.	1st July.	1st January.
Amsterdam........ (cheque)	12·08¾	12·04	12·09½	12·13¼	12·10¾
Berlin .... („)	20·38	20·39½	20·42½	20·42½	20·55½
Brussels .... („)	25·27	25·25½	25·23½	25·22½	25·38
Lisbon................ („)	$35\frac{15}{16}$	$29\frac{9}{16}$	37¾	39⅝	36·00
Madrid .... („)	33·58	46·50	33·90	30·80	32·33
New York (cable transfers)	4·84¾	4·86	4·85¼	4·87⅞	4·88¾
Paris .... (cheque)	25·24	25·22½	25·18½	25·18½	25·28½
Rome .... („)	26·46	27·04	27·15	26·99	27·17
St. Petersburg (3 months)	93·60	94·05	93·80	94·05	93·75
Vienna .... (cheque)	12·00	11·98½	12·04½	12·05½	12·14

TABLE IV.—*Comparing the Gold and Silver Stock of the principal Banks of Issue, their Bank Rate, the Rate of Exchange on London, and the Price of the Different Government Stocks of the Various Countries of Europe at the end of December*, 1899, *and at the end of December*, 1898.

	Gold.		Silver.		Bank Rate.		Rate of Exchange on London (Cheque).		Price of Government Stocks.	
	End of Dec., 1898.	End of Dec., 1899.	End of Dec., 1898.	End of Dec., 1899.	End of Dec., 1898.	End of Dec., 1899.	End of Dec., 1898.	End of Dec., 1899.	End of Dec., 1898.	End of December, 1899.
	£	£	£	£	Per cent.	Per cent.				
England	29,338,000	29,342,000	—	—	4	6	—	—	111	99¼ (consols)
Germany	37,616,000	35,498,000	(coin and	bullion)	6	7	20·43½	20·55½	93½	87½ (3 per cent.)
France	72,905,000	74,946,160	48,304,000	46,283,000	3	4½	25·23½	25·285	101½	98 (3 ,,)
Russia	99,453,000	86,189,000	4,190,000	5,399,000	5½	7	93·70 (3 mths.)	93·40 (3 mths.)	102¼	99½ (4 ,,)
,, balance abroad	1,605,000	1,249,000	—	—	—	—	—	—	—	—
Austria-Hungary	29,950,000	32,750,041	10,328,000	8,839,920	5	5½	12·07	12·14	100 100	96¾ Austrian 4 p.c. 97 Hungarian 4 p.c.
,, foreign gold bills	562,000	941,250	—	—	—	—	—	—	—	—
Italy	11,224,000	11,806,000	2,770,000	1,501,000	5	5	27·26	27·17	94$\frac{3}{16}$	93 (5 per cent.)
,, foreign gold bills	2,572,000	3,663,000	—	—	—	—	—	—	—	—
Holland	4,314,000	3,766,082	6,787,000	5,986,368	2½	5	12·12¼	12·10¾	96¾	92¼ (3 per cent.)
,, foreign bills	637,000	459,954	—	—	—	—	—	—	—	—
Belgium	3,992,000	4,329,400	(coin and	bullion)	4	5	25·31¼	25·38	99·80	96·60 (3 per cent.) (2nd series)
,, foreign bills	3,759,000	4,503,080	—	—	—	—	—	—	—	—
Spain	11,062,000	13,600,120	7,832,880	14,565,560	5	4	32·30	32·33	46½	65 (4 p.c. sealed)
,, foreign correspondents	2,698,400	2,793,840	—	—	—	—	—	—	—	—

TABLE V.—*Variations of the Bank Rate of the Principal European Issue Banks during* 1899.

Bank of England.	Imperial Bank of Germany.	Bank of France.	Bank of Russia.	Austro-Hungarian Bank.	Netherlands Bank.	National Bank of Belgium.	Bank of Italy.	Bank of Spain.
Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1 Jan. 4	1 Jan. 6	1 Jan.... 3	1 Jan.... 6	1 Jan. 5	1 Jan. 2½	1 Jan. 4	1 Jan. 5	1 Jan. 5
19 „ 3½	14 „ 5	7 Dec.... 3½	Feb......... 5½	18 May 4½	19 June.... 3	26 „ 3½	—	2 Aug..... 4
2 Feb. 3	20 Feb. 4½	21 „ 4½	7 Oct.... 6	21 Sept..... 5	6 July 3½	8 June.... 4	—	—
13 July 3½	9 May 4	—	18 Dec.... 7	5 Oct. 6	20 „ 4½	13 July 3½	—	—
3 Oct. 4½	19 June.... 4½	—	—	7 Dec. 5½	5 Oct. 5	5 Oct. 4	—	—
5 „ 5	7 Aug..... 5	—	—	—	—	12 „ 4½	—	—
30 Nov. 6	5 Oct. 6	—	—	—	—	19 „ 5	—	—
—	19 Dec. 7	—	—	—	—	—	—	—

TABLE VI.—*Market Rates of Discount of the Principal European Countries.*

	1895.		1896.		1897.		1898.		1899.		1900.
	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.	1st July.	1st Jan.
England	$\frac{5}{8}$	$\frac{9}{16}$	$1\frac{1}{8}$	$\frac{5}{8}$	3	$\frac{1}{8}$	$2\frac{15}{16}$	1	$3\frac{1}{8}$	2	$4\frac{3}{4}$
Germany	$1\frac{5}{8}$	$1\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{1}{2}$	4	$2\frac{1}{2}$	$3\frac{3}{8}$	$3\frac{1}{2}$	$4\frac{7}{8}$	4	$5\frac{5}{8}$
France	2	$1\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{3}{4}$	2	$1\frac{7}{8}$	2	$1\frac{7}{8}$	3	$2\frac{7}{8}$	$4\frac{1}{2}$
Russia	$5\frac{1}{2}$	$5\frac{1}{2}$	$6\frac{1}{2}$	6	$5\frac{3}{4}$	$5\frac{3}{4}$	5	5	$5\frac{1}{2}$	6	7
Austria-Hungary....	$3\frac{7}{8}$	$3\frac{3}{4}$	$4\frac{7}{8}$	$3\frac{3}{4}$	4	$3\frac{3}{8}$	4	4	$4\frac{3}{8}$	$4\frac{1}{4}$	$5\frac{3}{8}$
Holland	$1\frac{3}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{7}{8}$	$2\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{3}{4}$	5
Belgium	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{5}{8}$	2	$2\frac{1}{4}$	2	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{3}{8}$	$3\frac{3}{4}$	$4\frac{7}{8}$
Italy	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{4}$	4	3	3	3	$3\frac{1}{4}$	3	5
Spain	5	5	$4\frac{1}{2}$	5	4	3	4	5	5	3	4

DISCUSSION *on* MR. ROZENRAAD'S PAPER.

THE CHAIRMAN (MR. RICHARD B. MARTIN, M.A., M.P.) said he was sure they had all listened to Mr. Rozenraad's paper with the greatest interest. As the author had said in his concluding sentences, the paper opened up several distinct lines of thought, each of which might be very profitably followed up by a separate discussion. Mr. Rozenraad had shown very clearly, and he himself could support him practically, the very great and increasing interest that was being taken in England in international finance. Every year the connection between English and continental bankers and commercial men became closer, and thus every year English bankers had to consider more closely the position held by the great foreign banks. In this connection he thought that Mr. Rozenraad might have explained more fully the great difference between banks in England and the banks on the continent. Many of the foreign banks were really more financial houses than banks, and, working chiefly with their own money, used their resources for developing commercial and industrial enterprise to an extent of which in England we had no knowledge. Mr. Rozenraad pointed out how in Germany this had been done to an extent which might possibly hereafter prove a source of some danger to the German money market. He had also very clearly shown that England and Holland were the only two countries in which there was free trade in gold. Gold, though it was used for the purposes of currency, was after all a matter of commerce. The artificial restrictions which confined operations in Paris and in Berlin within certain limits did not exist in England. The non-existence of those restrictions was very much to the benefit of the London market. So far as England was selfishly concerned, he thought she did not want to see her position weakened by other free trade competitors coming into the field. If they came we should not fear them, but one did not generally seek for competitors. Having remarked that Mr. Rozenraad had made no reference to India or to its currency, he said that with regard to Russia the author had clearly and accurately brought out a most important point in reference to the way in which that country had been hoarding her gold and seeking to establish herself as a commercial nation. There was little doubt that this action of Russia would tend to the ultimate benefit of Europe generally, as, if pushed to its legitimate conclusion, it would result in the much greater opening up of that country to foreign enterprise. At present a great many of the mercantile and industrial concerns in Russia were really Russian businesses worked by the money and under the guidance of natives of other countries; and that was a state of affairs that did not tend to make a country rich and prosperous.

Mr. HERMANN SCHMIDT observed that it was difficult to criticise a paper of so wide a scope as Mr. Rozenraad's, but there were one or two points which he thought might raise some opposition. He referred not so much to what the paper contained as to what it omitted. Mr. Rozenraad stated that there "are only two nations which permit gold to circulate freely," namely, England and Holland; but a very large free market also existed in New York. Indeed, if it had not been for the free supply of gold which came in the ordinary course of trade during the last four or five weeks from America, the position of the international money market would not have been what it was that day. A very important matter not mentioned by Mr. Rozenraad, was the position of the Indian money market. That market had undergone a noteworthy transformation since last year. In the autumn the Indian Government formally introduced the gold standard. The result of the introduction of the gold standard into India had been a greater demand for silver rupees. The Indian Government, in order to facilitate the trade between this country and India, had allowed British bankers and merchants to deposit gold at the Bank of England, giving them, at the exchange of 1*s.* $4\frac{5}{32}$*d.*, money in India against it. About a million and a half of gold had already been ear-marked at the Bank of England for this purpose, and the stock of silver rupees in India had, through the payments in India, fallen to so low an ebb that the Indian Government the previous week saw itself compelled to suspend this operation; but either the Government must allow the trade in India to become demoralised, or else they must supply new silver rupees. The further purchases of silver and further coinage of rupees by the Indian Government might thus be the result of the introduction of the gold standard. But apart from this question of further silver coinage, the present and future demand for gold for India would be an important factor in the international money market. This remark also applied to what Mr. Rozenraad had said about Russia. He was right in saying that Russia was ambitious.

He also said that Russia, in order to create an important mercantile and financial position in the East, was accumulating gold; but if Russia was wisely administered financially (which he desired), she would accumulate silver. To exercise a monopoly of the trade of the East she would have to use the money of the East, which the Russo-Chinese bank was employing, and that was silver. Most of the gold which Russia had accumulated was absolutely useless, as was shown by Mr. Rozenraad's figures. They had covered their notes not merely by 50 per cent. but by 163 per cent. That did not show wise financial administration; it was a needless hoarding, a throwing away of golden opportunities. The vastness of Russia's stock of gold would not dazzle the world, if that was intended, because every one knew that the gold was virtually borrowed, and that she was paying interest to foreign creditors on that gold, which was all the time needlessly lying in her vaults. With regard to the position of Germany he thought that Mr. Rozenraad had somewhat incorrectly stated the case. He (the author) approved of the new German bill, by which, in order to get rid of 60 million marks, or 3 million £ sterling (nominally worth 1½ million £), the Government demonitised 360 million thalers, or 18 million £ sterling, about two-thirds of which formed the cover for the bank notes of the Imperial Bank of Germany which were in circulation in the country and doing the work of gold. If they withdrew 15 million sterling of this silver and recoined it into token money, the Bank of Germany's reserve, which now consisted of full legal tender, would then consist of fractional silver, which was of even less value than the legal tender silver. Should those 15 million £ sterling go into circulation, the reserve of the Bank of Germany would be simply decreased by that amount. That would not be an advantage. The Government had introduced a bill which had become law and would come into force on 1st January, 1901, increasing the fiduciary issue of the Bank of Germany from 14,700,000 £ sterling to 20 millions. In other words, they expected 5 millions of the token silver to go into circulation, and they provided for it, not by gold, as Mr. Rozenraad said, but by Government debt—by a fiduciary issue. This was not an improvement as regarded the Bank of Germany. He was obliged to Mr. Rozenraad for the able review he had given of the different forces which were exercising an influence on the international money market. Hitherto the Transvaal had been an absorbing factor of European capital in spite of being a producer of gold. But the gold which had been obtained had not benefited Western Europe, but became part of what Russia had accumulated. Therefore the cessation of the gold supply of the Transvaal would have a much smaller influence on the market than is generally thought. What would affect the money market was the Indian demand, and possibly the demand for America if she should call back part of those millions she had recently supplied. The question, then, would be whether Russia could continue to hold the stock she had, and which she had only been able to hold hitherto by constant borrowing. In 1898 she borrowed 14 million £ on railway bonds in Germany. In 1899, 10 million £ on the bonds of the Nobilité Bank in France. She also issued a loan of 3 million £ in England, which was only a partial success. If the present position of the money market prevented Russia from borrowing more money abroad, the gold must leave her again, and then there would be larger supplies of gold in the international money market than there had been of late, in spite of the cessation of the Transvaal production.

Mr. A. S. Harvey said that the paper covered so wide an area that one really did not know what particular point to select for a short discussion. Personally he was much obliged to Mr. Rozenraad for the great number of facts he had brought together, and he felt sure that this paper would have the compliment paid to it of being frequently referred to in the Proceedings of the Society. Of course, in the ultimate resort all considerations of financial and commercial matters, wherever they began, eventually worked up to gold. He thought there would probably be found a certain apprehension in the minds of those who, like himself, were engaged in the business of banking, when they listened to such an exposition of the enormous development of their responsibilities, as to whether we in this country had got quite enough of the commodity in question. Mr. Schmidt had added another free gold market—that of New York—to the two alluded to by Mr. Rozenraad. With regard to the English banking system, they were lucky enough to have a great national bank which had worked the currency of the country with conspicuous success for centuries. But in the ultimate resort the only power such an institution could possess to attract gold was the rate of discount. It always had operated, it was true, but there had been times when putting up the rate did not seem to bring gold, and when, as a well-known statistician once said, "the heavens seemed to be of brass, and gold would not come." Still, the rate went up, and the gold at last did come. The Bank of France, notwithstanding its enormous store of gold, hardly ever varied its bank rate. It charged a premium on gold. In other words, it worked the commerce of that great country by affixing a premium to one form of loanable capital, not by altering the rate for all forms of it. Then, with regard to the Reichs Bank, gold was not easily procurable there. It was said that gold was never refused by the Reichs Bank, but nobody, he believed, ever went to ask for it; and it was pretty well understood that it was, as a rule, inadvisable to ask for it. The wonderful economic system of England, with its free market for gold, stood almost alone. Our great English Government did not keep a chest in Downing Street, and had never thought of doing so. He had sometimes wondered whether the time would ever come again when the Chancellor of the Exchequer would hold a war chest at Downing Street, and would go to his box of valuables for the sake of pawning them, as he used to do under the old Norman kings, and as the chancellors of other governments still had to do, for the so-called "war chests" of foreign countries were only the modern forms of the old Exchequer chests of Norman times. But in the end it came to this: our great financial system, with its world-wide international market, working by that great institution in Threadneedle Street, and feeling the pulse of every one, was in the ultimate resort dependent upon one little bit of mechanism, the raising of the rate. As he had said, the system had always worked well, though sometimes London bankers got a little apprehensive when it was found that there were large stocks of gold on the continent which the raising of the rate did not reach. He hoped that this paper would have the result of making them think whether, in regard to our reserve of gold, our system was as sound and as complete as it had hitherto been supposed to be, or whether there might not be needed some few changes, which he would not now discuss, in order that at critical times the gold reserve could always be kept up to its proper proportion. He knew well that that was a responsibility which could be no longer accepted by the Bank of England alone. Other large bankers, with their enormous resources, must share it, and he was quite sure that if ever it was shown that the development of international trade required a modification of our system, there would be no backwardness on the part of the London bankers in doing their duty without disloyalty to the central institution. With reference to the relation of the market rate, he would ask Mr. Rozenraad whether it would give him much trouble to append one other table to those now given, so as to show not only the average of the bank rate during the years in question, but also the average of the market rate for the discount of the best bank bills.

Mr. L. C. Probyn would say a few words, as the subject of India had been mentioned. He hoped and trusted that, following on the establishment of the gold standard in India, India would have a free gold market just as England had, and that the authorities would not rest content until it was possible to move capital from India to England by means of gold, as gold in England could be moved to any part of the world. With reference to the use of gold for the purchase of silver to coin rupees, he did not think Mr. Schmidt need be so much alarmed as he apparently was, because, if gold were used for that purpose it would come back again to England. He quite thought with Mr. Schmidt that the time was coming when it would be necessary for the Government of India to coin more rupees. He did not know if Mr. Schmidt remembered the circumstance, but his own proposition was that the coinage of rupees should be regulated automatically, and should depend on the composition of the metallic reserve in the Indian paper currency department. Thus when the proportion of gold equalled the proportion of silver in the metallic reserve of the Indian paper currency department, the coinage of silver rupees should then be commenced. He believed that that state of things had now arrived, and it was, therefore, in his opinion, quite time that the Government should set to work to coin more rupees. They would however have to take care that the proportion of gold should not fall below the proportion of silver.

Mr. J. Barr-Robertson observed that Mr. Rozenraad in his interesting and comprehensive paper had shown that in this country we had been importing gold to excess. Last year the amount was 7 million £ sterling, and for other years of the last four or five we had had such figures as 11 and 14 millions. Now these large importations, as Mr. Rozenraad had shown, were not found in the Bank of England, but had passed into the internal circulation, and in doing so they had one very important effect. Mr. Sauerbeck's index number for 1896, three years ago only, was 61, as compared with 100 in 1867-77, and for the month of December, 1899, it was 72. That indicated a rise of 18 per cent. in the average prices of forty-five leading commodities in England. The rise of prices was, of course, a most important factor in the great industrial activity and prosperity of the last few years, and it was mainly due to the increase of the amount of gold in our internal currency. If the money had passed into the Bank of England and remained there, no such rise would have taken place in average prices. With reference to the table of the American circulation[1] and the stock of gold in the United States, he wished to point out that the $174,000,000 of gold certificates were included in the $876,000,000 of gold stock in the country; coin and bullion being always included together in the official returns of the stock of gold in the treasury. In the second column it was stated that the gold was $248,000,000, but Mr. Rozenraad had omitted $141,000,000 of bar gold which was held in the treasury. He thought also that the figure of the amount of gold in circulation, as shown in the third column, ought to be reduced by the amount of the gold bullion in the treasury, so that the total amount of gold in circulation outside the treasury would be only $485,000,000 and not $627,000,000. With regard to silver, the total amount of silver dollars issued, as shown in the first column, was $482,000,000, and the silver certificates issued were $400,000,000, against which the same amount of silver dollars were deposited in the treasury. But in fact the silver dollars were locked up, and could only be delivered out by the Government on the presentation of silver certificates, while the $400,000,000 of silver certificates were in circulation. In the last column it was shown that there were 78,000,000 of silver dollars in actual circulation. Mr. Rozenraad appeared to have counted the silver dollars and the silver certificates, and also the gold and the gold certificates; thus making the total amount of money in the country, as shown in the first column, greater by $570,000,000 than it ought to be. In his subsequent remarks Mr. Rozenraad referred to the fact that the United States was suffering from the large amount of silver dollars and paper money. It was perfectly true that they had a very large amount of greenbacks, silver certificates, and national bank notes in circulation, but, on the other hand, it ought to be pointed out that, in spite of this, the gold in the United States had been increasing for several years, while practically no increase had been made in paper money or silver. In the fiscal year ended 1898, the United States had added to their stock close on $200,000,000 in gold. He further criticised the remark that the cost of the export of gold from the United States had anything whatever to do with the quantity of silver certificates and the paper money in circulation, for the greenbacks had been standing at the same figure for the last thirty years, and the silver dollars at the same figure for the last six or seven years. As these quantities were stationary, they could not have any influence on the export of gold, when gold itself was increasing in the internal circulation and in the treasury.

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[1] See the note on p. 20 (*ante*).—Ed.

Mr. W. G. CLAY referred to what he thought was one of the most interesting questions raised by this paper, namely, the methods by which matters were so arranged that the inflow and outflow of gold in this country never attained inconvenient dimensions. As Mr. Harvey said, it was ultimately managed by the action of the Bank of England in raising its rate of discount, and he had also told them of the difficulties which were found in the working of that system; but it would be most interesting to ascertain how it was that the raising of the rate of discount seemed sometimes to work very well, and at others to work either very slowly or not at all. Why, for instance, was it that in the autumn of 1896 the Bank of England raised its rate from 2 to 4 per cent., and kept it at that rate for nearly three months, with the magnificent result of attracting less than 24,000*l.* from the leading continental countries; and why during all that time the bank and market rate in France remained at fully 2 per cent. under the bank rate of this country? He understood Mr. Harvey's remarks to suggest that any action of the Bank of England, either with or without the co-operation of the other bankers, must be in the direction rather of prevention than of cure. The great thing was, if possible, to avoid these fluctuations and having recourse to the discount screw. In Mr. George Clare's "Money Market Primer" there was a very interesting diagram giving the fluctuations of the average bank rate of the Bank of England since the Bank Charter Act. At first the fluctuations were exceedingly violent. As time went on, and as experience was acquired of the working of the international money market, less reliance was placed on what was called the automatic self regulation of the currency, and the fluctuations became more regular. But he did not think it had ever happened before that one found, as Mr. Rozenraad's paper showed, from 1895 to 1899, a series of five years in which the movements of the average bank rate formed a perfectly regular progression. Those figures seemed to him to show that progress was still being made in the desirable object of so regulating the fluctuations in the imports and exports of gold that the mercantile community should not be disturbed by constantly fluctuating rates of interest and discount. Stability of rates of discount was secured most perfectly in France, but it was achieved by her excluding herself from the monetary market of the world, her market being the tightest for gold. That the Bank of England should be able to manage a problem of far greater difficulty, and to deal with far greater forces, he thought spoke well for its management. For the last few years their task had become increasingly difficult, because of the influence of the action of the United States on the fluctuations. The great accumulation of gold in the Bank of England during 1894-96 was very largely due to the enormous exports of gold from the United States consequent upon the collapse of 1893. In 1896-98 an equally violent movement took place in the other direction, and in 1898 alone the United States imported an amount considerably in excess of the gold production of the world during that year. That so little inconvenience had been caused till that autumn, and that regular progress towards higher rates had been maintained, spoke highly for the efficiency of the English system.

Mr. C. Rozenraad, in reply, said he first wished to make a few remarks in reply to Mr. Schmidt, who, as they knew, was a great defender of silver; whereas he had been brought up in a very different school, and was more in favour of gold. If, as Mr. Schmidt had said, he wished the banks to have large gold reserves, it was because gold was the only metal used for international purposes, while silver could only be employed at home.

This brought him to Mr. Schmidt's second point, as to why the German Government had introduced a Bill into Parliament to sell a portion of their silver thalers. It was because they had never completed their monetary reform of 1873. As he had explained, the German Government, when introducing in 1873 the gold standard, began by selling its superfluous silver; but, when the sale of the first 7 million £'s of silver gave a loss of 96½ millions of marks, it stopped in 1879 all further sales of silver, with the result that, as the heavy silver thalers were not much liked by the public, the greater portion of this superfluous silver was lying in the vaults of the Imperial Bank of Germany, which metallic coin and bullion was only composed of two-thirds in gold and one-third in silver. The German Government, therefore, took a step in the right direction by transforming an amount of 300 millions of marks of silver thalers into fractional currency, and selling 60 millions of marks of silver. The German bank note would then be nearly fully secured by gold; and as, on the 1st January, 1901, the uncovered paper circulation of the Imperial Bank of Germany, free of tax, will be raised from 293·4 to 400 millions of marks, the bank will be in a much stronger position, and able to grant on a larger scale than before the facilities required by trade and industry.

As to Mr. Schmidt's third observation that, when stating that there are only two nations which permit gold to circulate freely, he had forgotten America, he would refer Mr. Schmidt again to his paper. He had never said that America was not a free gold market. On the contrary, he had clearly shown that, while it was extremely difficult to obtain gold from the continental banks (with the exception of the Netherlands Bank), New York had sent large amounts of gold. In fact, had it not been for those large remittances of gold from America, the Bank of England would not have been able to reduce its rate of discount from 6 to 5 per cent.

Mr. Barr-Robertson had spoken about the figures given in the table of the American circulation and the stock of gold in the United States treasury, figures which were official and therefore absolutely correct. By a printer's error there was a misstatement as to the amount put into circulation. This would be corrected, and he had no doubt that then Mr. Barr-Robertson would agree. But where he differed entirely with Mr. Barr-Robertson was when this gentleman said that the excessive circulation of paper and silver had no influence on the rate of exchange. As he had explained in this paper, and more fully in his book, "The Financial and Monetary Situation in the United States," which was in the library of the Royal Statistical Society, paper money and silver have played, till now, a far too prominent part in the United States currency, leading to continuous exports of gold, sometimes even to an exhaustion of the gold reserve. The law of Gresham had nowhere been so true as in relation to the condition of America, and it was this inflation of silver and paper money which finally had induced the United States Government to propose the contraction of the paper currency, and to introduce proper proportions between the national currency and the requirements of trade and industry. Considerations of time and space had prevented reference to India and other countries.

With regard to Russia he did not differ much from Mr. Schmidt. It was quite true that Russia had obtained a large portion of the gold now held by the State Bank by placing loans in France, gold which they meant to keep, raising the rate of discount as soon as the rate of exchange reached the gold point. Then, as he had explained, the Russian Government, in view of the great development of trade and industry which would take place after the completion of the Siberian railway, wanted to be in a strong position with regard to her stock of gold, for she desired to play the leading part in the Far East; and even in those regions gold was already and would be in the future the metal by which international transactions would be settled.

On CENSUS-TAKING *and its* LIMITATIONS.

By J. A. BAINES, C.S.I.

[Read before the Royal Statistical Society, 20th February, 1900.
LESLEY C. PROBYN, Esq., Vice-President, in the Chair.]

AT a time like the present, when public attention is concentrated almost exclusively upon the promotion of the national interests at the other side of the world, it is scarcely in reason to expect that the current emanating from the well of statistics undefiled, at which we are accustomed at this season to quench our scientific thirst, should be allowed to pursue the noiseless tenour of its way uncontaminated by the cross currents of outside preoccupations. Among other lamentable results of the war is the postponement of our President's inaugural address, which had been fixed for to-day, but which we can only hope for at a subsequent meeting. The short time allowed by the change of programme admits of the production of nothing better than a makeshift paper; in fact, my position reminds me of the story told by Sir Algernon West, in his recent charming book of "Recollections," of Lord Granville, who, when called on to replace Mr. Gladstone at the Academy dinner, quoted an offer he had read in a ladies' paper of the exchange of "a singing bird for an old muff." Looking at the eminence of our President, and the attractive and important subject he has selected for his address, I feel I can confidently rely upon the recognised superiority of the pleasure of anticipation over other pleasures in consoling ourselves on having in reserve good wine not usually available to bring together a large company towards the end of the Society's session.

Admitting, then, that the paper is thin, and the treatment of the subject somewhat superficial, I may claim in compensation the full sympathy of Fellows of the Society with its general purport. There are, I think, few statistical questions of periodical recurrence the importance of which has been so fully recognised by us, and which have received accordingly such careful consideration at our hands, as that of how to promote the success and efficiency of our decennial census. The campaign was opened in 1840, and has since been continuously carried on whenever the operations have come under official discussion. Many Fellows of the Society will recollect the instructive paper read in 1889 by our esteemed colleague Dr. Longstaff, and the part taken by him and others of our number before the Treasury Committee, the chair of which was taken by our immediate past President, Mr. Leonard Courtney. It must be admitted that our efforts have not met with the success they, in our opinion at least, deserved, and that many of the suggestions which were held by us to be of the highest practical value, have failed to commend themselves to the official bodies concerned. On the other hand, the attempt has not been in vain in that it has tended to concentrate the views of many cognate societies upon definite points, and to enlist alongside of us the aid and sympathy of many who have in view the same general object as ourselves, and who can bring to bear upon it, moreover, the weight of great and varied experience.

It was in no desponding spirit accordingly that the sub-committee appointed last year by the Society, and led, we hope to victory, by our distinguished friend, Sir Robert Giffen, considered afresh the situation, and launched the communications which have been laid before you. Some of our suggestions were new, others reiterated the old and cherished ideals. We hope to ultimately make an impression, *non vi, sed sœpe cadendo*, upon even the Local Government Board, which, after all, is, by its name, of wood only, and so more open to persistent instillation than the bed-rock of its neighbour, the Treasury, on which our late effort for a quinquennial enumeration was shattered, the impact being engineered by our errant colleague, Lord Welby, another "lost mind."

I propose now to review some of the principal factors that contribute to a successful census, from the point of view of one who has been obliged on more than one occasion to grapple with them from the inception even unto the bitter end of the operations. In the first place, it is essential in the highest degree to get an early start. If, as in this country, legislation is necessary before a single step can be taken, it is obvious that the statutory authority should be either permanent, to be used at definitely stated intervals, or at least that it should be conferred at a date sufficient to leave abundant time for the preliminary measures. Few people adequately realise the amount of preparation entailed by a general enumeration, the vast field, and the amount of detail to be covered. The usual conception seems to be that a rather seedy stranger drops a curiously complicated paper (which has to be read at various angles) containing certain foolish, certain other impertinent, and other again unintelligible and futile questions concerning one's maid servant and the stranger that happens to be within one's gates, and that the said paper is called for the next morning, your inmost family details unsympathetically perused, probably with the remark that your declaration of occupation indicates that you do not know your own business. The one drop of comfort lies in the assurance that if you find that your wife's age has become the common property of your court or alley, you are at liberty to complain of a breach of official confidence, which, however, is not in England, I believe, punishable by law. What has to be really taken into account, however, is the difficulty of getting that seedy reprobate to one's door at all, and also to ensure that your neighbours one and all are subjected to his visitation equally with yourself, so that no one escapes the inquisition of that bit of paper, and further, that every bit is duly rendered to the proper authority and made available for use in the subsequent operations.

The actual time required for preparation differs, obviously, in every country; not only by reason of social and geographical features, but in proportion to the permanent provision made by the State for such statistical alarums and excursions as a census. As to the latter question, I fear that recommendations for the establishment of such a permanent agency, however sound in their merits, are not likely to be favourably received just now, in either this country or in India, where it is equally necessary. At the close of my term of office, I left to my successor, who was appointed last November, bound and indexed volumes of all rules, circulars, estimates, notes and other documents referring to the preparations and subsequent procedure at the last census of India, and I have since submitted to the Government a memorandum containing suggestions and warnings for use on this occasion. But in spite of all the pioneer work that had been done, I felt compelled to recommend a period of preparation only shorter than before by two or three months, and I am informed that the period has been found none too long. I speak now only of the central and controlling authority, by whom the whole procedure is regulated, and who is responsible for the general lines of the operations and for every form and register prescribed. The application of those rules to local conditions, the translation of schedules and instructions and the details of practice, which differ in each province, are entrusted to the provincial superintendents, who, the Census being late in February, do not, as a rule, take up their duties until the beginning of April. It must be remembered, moreover, that these officers are not generally men already experienced in census administration, but are selected on consideration of their reputation for general administrative ability and their knowledge of the people. They have therefore all their work to learn. In this country, as our colleague, Mr. Noel Humphreys, is perhaps regretfully aware, the word "go" has not yet been given, and the Bill which defines his course is still, apparently, in embryo. The Census Act is not of anything like the same importance in India, and is anticipated by much of the preliminary work done through the permanent official channels, but as it regularises the position of the officers specially engaged, and affects financial arrangements, it is required before the operations bring the census into direct touch with the householder.

From the excellent description of the operations in India given by Mr. Reginald Hooker in his comprehensive review of the census operations of the British Empire, read before us early in 1894, it will have been seen that there is but little of the detail in our eastern dependency that runs parallel with the work that falls upon the census superintendents in the United Kingdom, and it is in this last that we are mainly interested at the present time. If, then, I make use of my Indian experience here, it is for the sake of illustration by contrast rather than by comparison, and as enforcing from a different standpoint the lesson of timely preparation. Each country has its own special difficulties and its own relative advantages in regard to the census. In the main, the difference is more prominent in the results than in the administration. Here we find a comparatively homogeneous social framework with a highly complex commercial and industrial development. In India, on the contrary, the industrial structure is of the simplest, whilst the social system and ethnic distribution is one of the most complicated, the most varied, and the most elaborate that the world presents. In the former, urban conditions, in the latter rural, are markedly predominant. Hence the enumerator's area in India is greater and his population smaller than here. The general illiteracy and narrow horizon of an agricultural population not only render the supply of enumerating agency less abundant in India, but also increases the work of enumerating, since it puts out of question the practice of leaving the responsibility of filling in the schedule to the householder. On the other hand, the work of everyday administration necessitates the presence in each village community of some one official responsible for the clerical work of the whole, and thoroughly acquainted, therefore, with every house and family in the place. Then, again, and in this respect I know that my statement will bring the tears of envy into the eyes of Mr. Humphreys, there is in India no overlapping of areas. From the village through the subdivision and district, to the province, there rules one series, the smaller units being multiples of that immediately above, and the same regularity is generally found to prevail in all the older cities and most of their suburbs. There are, of course, exceptional tracts, as in the mountainous country and in the comparatively recently colonised plain of Bengal, but, for the most part, all that has to be done is the subdivision of the village and hamlet, and the separate numbering of the houses therein, by enumerators' blocks, and so registering them for census purposes. I shudder when I think of the London areas, as set forth in a document recently published by Mr. Gomme for the County Council: still more when there rises before me the thought of the pitchy day that is being sorted for the Census Authorities by the Commissioners under the London Government Act of last year. Then, again, there is the nightmare of Penge, possibly other examples of nearly the same sort. In that singularly fortunate locality, Mr. Bumble, when he existed, would have served Lewisham in his capacity of parish beadle, have voted at Dulwich, as a citizen of Camberwell in London, have paid his court to the matron he affected, in the Croydon Union, and have been registered on his lamented decease, in the county of Surrey. All of which would have to be taken into account in different sections of the census tables.

To establish order in this chaos, to demarcate and partition the areas into such blocks that they can be successively fitted into all the different divisions which have to be recognised in the returns, to define the limits of each, and ensure an accurate knowledge of them by the enumerator, all this seems to me to be of itself an amply sufficient reason for giving a year's start to the preparations. In India, no doubt, we have difficulties more or less geographical to overcome, such as the long railway leads, entailing special arrangements for counting all night passengers; the hill tracts and great deserts, and the large coasting trade, the hordes of vagrants and the vast concourse of visitors at shrines and fairs, not to mention popular local weddings, where it is "kept up" all night and over, by the neighbourhood, which will not return home in time to be "censed." Troops on the march, again, give trouble to an enumerator, so do plague and cholera camps, and the like, and boats heavily laden with goods and people, which come swinging down the great rivers by night at the rate of seven or eight miles an hour, defying the police craft, and entailing telegraphy and bad language at the next halt. But all these episodes are such as can be coped with by foresight and pre-arrangement. The difficulty, too, arising out of the enormous population is not, as I think I stated in the discussion on Mr. Hooker's paper, by any means as formidable as might be expected from a mere comparison with the conditions under which the census is taken in this country. The Indian authorities have of course to provide a huge mass of schedules, and to have them and the instructions translated into sixteen or seventeen languages, but the work is decentralised, and, with the actuals of the last census as a basis, fairly accurate indents, erring on the right side, can be sent to press long before the time of distribution. Towards the critical time, as may be anticipated, panics arise, and have to be stayed by supplementary indents. Then, again, the large army of enumerators requires special supplies of inkstands, with black ink for the preliminaries and red for the final process made over to them. It is the red ink that breeds trouble; a little matter, it may be thought, but, as I hope to show, an important one.

Owing to the general illiteracy and the incapacity of more than some two persons in a hundred to understand and correctly fill up their schedule, the Indian census authorities must provide agency prepared to make all the inquiries and fill in the information. Not to create invidious distinctions, it was prescribed that only Europeans and native gentlemen of high rank should have schedules left to be filled in independently. The city of Bombay was an exception to this rule, though in practice, the same course was pursued there as elsewhere in regard to the lower classes. It is obviously impossible for a man to go his round filling in an elaborate form with information gleaned from an unwilling and obtuse subject, unless the round be a very small one. The supply of enumerators being inadequate to subdivide the rounds, we had recourse to what I venture to characterise as the most excellent device of a "preliminary record," which has been described by Mr. Hooker. The population usually resident in the house was entered on the schedule some days before the census, so that in the night itself the enumerator had only to bring it up to date in accordance with the actual facts. This, for purposes of check, he did in red ink. The interval between the two operations was purposely kept as short as possible, and just served for the schedules to be reviewed by the supervising officer of the circle.

The question often arises as to the respective efficacy of the enumeration by outside agency and that by the householder in person. To any one who has gained experience in the matter it is simply a question of habit and temperament. In India there is no alternative. On the continent of Europe and in the States there is general uniformity, but no doubt the prevalence of official action to a very wide extent allows of domiciliary inquiries in some countries which would be resented elsewhere, and which would be impracticable in Great Britain. In Ireland, however, the matter has been hitherto left to a great extent in the hands of the constabulary, who, when not preventing the masses from "wading "through blood to the independence of their counthry," seem to form a popular and admirable body of enumerators. There is, however, a considerable difference between the two systems in the matter of results; nevertheless, for the sake of uniformity, the sub-committee of the Society has suggested the assimilation of the practice in Ireland to that in this country. Setting on one side this last consideration, I doubt if the change will prove of much moment. While I am on the subject of Ireland, I cannot refrain from referring to the loss sustained by the statistical world by the death of our distinguished colleague, Dr. Grimshaw, who was for so long at the head of Irish registration, and in whose hands the census of that country attained so high a reputation.

Before passing from the question of the enumerating agency, I ought to add a few lines on the question of its efficiency, under whichever system it works. The Indian census authorities can rely, as I have just pointed out, upon a large nucleus of permanent village accountants and registrars accustomed to handle forms and figures. Then again the unusual ramifications of State agency in a half-developed country like India provide a further supply of more or less responsible subordinates whose services are fortunately made available for three days or so by the simple expedient of decreeing a public holiday for the census, and turning every official thus set at liberty on to a block as near as possible to his ordinary residence. There is thus comparatively little need of outside agents, and such as are wanted can be got, on payment of out-of-pocket expenses, for the distinction of flourishing round with pen and ink and two or three torch bearers and attendants. In place of the imperial medal that our colleague, Dr. Troinitski, found advisable in Russia, a mere paper certificate of good work satisfies the mild Hindu. In the larger cities, however, a staff of stipendiaries has to be called in, but many of these are of a class that can be utilised in the later operations. Thus in India we have the great advantage of not only an adaptable body of men, but of the opportunity of drilling them well beforehand in census detail, a point to which I attach the highest importance, and which indeed has been found an absolute necessity. Shortly before the preliminary record is set in hand, each supervisor personally conducts a gang of enumerators round a block near the office, with a batch of spare schedules for experiment on actual facts. At odd times again during office hours, enumerators *in posse*, who chance to be in attendance on other business, are told off to fill up a form or two for a few applicants, witnesses, or other bystanders; these are all examined and corrected before being thrown away. It really seems to me, speaking with all deference to my fellow countrymen, that by the above means we succeeded in getting a higher degree of efficiency than seems to have been attained, judging from the evidence presented before the Courtney Committee, amongst the casuals recruited for the English census. We have more hold over them, a longer time wherein to test and drill them, and generally more docility and conscience. I admit the greater difficulty of the task entrusted to the English enumerator. I also am bound to recognise that the average inaccuracy of record, especially in regard to matters which allow of alternative answers, such as occupation, being greater when the schedule is left to the discretion of the absent-minded householder, the duty of correction in those circumstances is one requiring tact and delicacy of approach. I make this comparison because next, of course, to the accuracy of the actual numbering of the people, that of the descriptive details constitutes the touchstone of the value of the census. The intelligence and good will of the enumerated on the one hand, and of the enumerator on the other, are the links therefore in the census chain upon which the success of the operations depends.

Assuming that the arrangements for enumeration are complete, though this is a hypothesis which no census superintendent will accept until the day preceding the fateful night, there still remains the onerous and responsible task of organising the agency and system through which the results are to be converted into statistics. The whole scheme, like that of enumeration, has to be thought out and laid down in detail some time before it is required to be set in motion. The actual printing of the numerous sheets and forms, not to mention the labour of devising them, is a considerable burden upon the superintendent, since an adequate supply must be ready for use almost immediately after the census has been taken. The provision of competent agency, again, is no light duty, especially where the work of abstraction is centralised. Mechanical quickness and accuracy of eye suffice for the large proportion of the work into which no question of classification involving the use of discretion enters, and for which, accordingly, a system of independent working combined with arithmetical checks provided by the sheets themselves supplies all that is wanted. For all beyond these comparatively rudimentary results a superior class of intelligence must be enlisted, forming a sort of *corps d'élite*, working on rules directly supervised by responsible control from head-quarters. How far the work of abstraction can safely be decentralised is a question to be decided by local circumstances. Speaking generally, it depends entirely upon the supply of suitable clerks, combined with the equally important supply of efficient supervision. In any case, the final processes of classification and compilation must usually be concentrated into a small compass. In connection with this part of the subject an interesting question arises as to the extent to which the enumerating agency can advantageously be utilised in the further handling of the schedules. In this country their employment is carried further than in India, but not so far, I believe, as it was in Russia. It will be gathered, no doubt, from my account of the sources of the aid we get in India, that the services of men otherwise engaged in official posts can only be allotted to census work for a short period, and as to the outsiders engaged, the quality was not, as a rule, up to the standard of continuous clerical labour of the nature of abstraction. The whole staff, therefore, was not employed beyond the preliminary totalling, though in some provinces, as in the Punjab, a large proportion was drafted into local centres, and there undertook, with admirable results, the whole of the tabulation.

The preliminary totalling was a job on which I hope to be pardoned if I reflect with considerable complacency, not so much on account of the results themselves, but because it illustrates the value of a scheme well thought out beforehand, and therefore on the lines of least friction. The ten or fifteen block-enumerators in a circle betook themselves early on the morning after the enumeration to the headquarters of their supervisor, and, sitting around him, totalled the blocks by sexes, handing up the result pencilled on a small form provided for the purpose. Each block was then made over to another enumerator, who re-totalled independently. The results were compared, and if they corresponded, were inked in until all were entered. The circle was then totalled, and the slip sent off to the subdivisional centre. Here the slips were totalled for that area, and transmitted to the district centre, where the process was completed for the provincial unit, and the result telegraphed to me and to the provincial superintendent simultaneously. As soon as the province was ready we compared notes. I should add that the large towns were dealt with on exactly the same principle, though by different areas. By the end of ten days I had the totals of two provinces, one of 46, the other of 18, millions, in my office, and within five weeks I was able to telegraph to the Secretary of State a complete figure, which differed from the final of over 287 millions by less than $\frac{1}{2}$ per cent. I ought to add that, apart from natural anxiety on my own part to see the general result, our efforts had been stimulated by a suggestion from this country that the preliminary results would be gratefully received by the census authorities then located in their corrugated iron palace in the shadow of the India Office.

Reverting to the general question of tabulation, I may add a line or two upon the machinery most suited to the almost mechanical processes with which the operations begin. Our subcommittee has recommended the omission from the coming Census Bill of the prescription of copying the schedules into enumeration books. That this practice has considerable advantages no one who has had to handle the schedules will deny. On the other hand, it is equally within experience that, as most of the tables are based upon combinations of facts not drawn direct from each column of the schedule independently, the physical and mental strain and the chance of error are diminished by some preliminary process of analysis, such as is made possible by the collection of the schedule entries for each individual on to a separate card. Simple combinations are thus materially facilitated, whilst the more complex, in which the probability of error in using a much-subdivided abstraction-sheet is obviously very high, are brought down to a far more manageable level. In these circumstances, it seems obvious that a matter entirely dependent upon technical convenience should be left to the experience and discretion of the authorities in charge of the operations. One point in connection with the use of cards occurs to me, and this is, that the utmost care has to be taken in keeping the card-bundles complete for each block or other unit of tabulation, a difficulty from which the book-system is exempt.

Then, again, there is the question of the use of machinery, such as Mr. Hollerith's electric tabulator. We had the working of this ingenious instrument explained to us by the inventor some years ago, and it has been tested by wide employment in the States and in several important statistical offices in Europe. At the last International Statistical Congress illustrations of its utility, especially in the combination of several columns of the schedule, and in compiling railway traffic statistics from Russia and Austria, were given us. In the face of such evidence it would be ungrateful not to recognise the value of the machine. At the same time, there seem to me, perhaps wrongly, two chances of error, of which one, at least, can not be eliminated by mechanical contrivance. In the first place, the whole operation is dependent upon the punching of the cards used, and unless this be subjected to continuous test, either by re-doing or some other method, an initial error is established which vitiates the subsequent record throughout. Again, it has been stated to me that in feeding the machine very quickly there is the chance of missing connection in the current. Altogether, the machine, though evidently worth trying, is by no means infallible, and where clerical labour is cheap, I confess my personal preference for the "soaring human "boy," provided, of course, that the amount of supervision is such as will prevent his thoughts from straying into the fields of original research in his compilation, the latter not being a class of work which stimulates enthusiasm. This observation applies more especially to work in which various items have to be grouped under general heads, or brought into some other scheme of classification. In this country the occupation column is the only one that needs special treatment. In India, unfortunately, religions, languages, and above all, castes, have to be added.

As an indication of the distinction between this class of tabulation and the rest, I may quote my own experience. I received from my provincial superintendents within between five and ten months of the census the whole series of what may be called the primary tables, including those of religions and languages, but the returns of occupation and caste were in several cases more than a year, and in one case more than eighteen months behind them, the cost of preparation being, of course, in proportion. And here I may remark in passing, that while in this country the cost of enumeration is the more serious consideration, in India it is the cost of working up the results that we have to take into account, this being the point in which the enormous population to be dealt with, as well as its complexity, overloads the census budget of the second year of operations. Here it seems one of the main causes of expense in tabulation is the great number of different areas for which totals of various returns have had to be prepared, and even now there is a not unreasonable demand for greater detail, geographically speaking, in regard to occupations. In India this would be met in the manner proposed by one of our numerous census sub-committees, by ascertaining beforehand the detail required by the local authority, and having it taken out, if not beyond the scope of the general operations, at the cost of the Oliver who has asked for more. The large supplementary volumes included in the reports of the more populous provinces indicate the need of this information. I can only hope that as regards London, at all events, the authorities will see their way to give opportunities for special tabulation of this sort, provided, of course, that the progress of the general operations is in no way impeded by the concession, and that the salutary rule of secrecy as to individual entries is duly enforced.

There are many other interesting and important topics connected with the taking of a census on which I might comment, but which are superfluous when the object is to give a general view of the difficulty and complexity of the task, and of the curiously varied administrative aspects of apparently so simple a process. I pass on, therefore, to what is more likely to commend itself to the majority of the members of our Society, the nature of the information which can be obtained through the medium of a census. Here I enter upon the chapter of limitations.

I have already remarked that the weak link in the census chain is the householder in this country, and the enumerator in India, and wherever the work is done by official agency; it follows then that the first limitation imposed upon the census is that the information asked for should be no more than the person of whom it is asked may be reasonably assumed to be willing and competent to give. The second is, that at a synchronous inquiry, such as those I have been considering, no information should be sought which can possibly be obtained by other means. The census is, after all, but a rough-and-ready method of inquiry, its main object being to get a photograph of the population in some of its most general aspects at a given moment. If it be extended over several days, there is the probability that, whatever the precautions taken, a considerable number of individuals, especially in the busy life of Europe and the States, will be counted twice or even oftener, and in places far from each other. The shorter and simpler the schedule, therefore, the greater the chance of complete record. The enumeration of houses and rooms, and so on, being intimately and directly connected with that of the population inhabiting them at the time in question, is a fair addition to the return. The area and tenure of land, the number of cattle, the capital and staff of industrial undertakings, and the like, appear to lie outside the scope of the inquiry, and, as in America, should be relegated to subsidiary forms, filled in at greater leisure than is afforded by the hasty visit on the morning following the census. All of them, no doubt, must ultimately be correlated with the latter, but the same may be said of half the annual returns of the State.

I now return to the question of the personal equation of the householder, in which the leading factors are prejudice and ignorance. The latter, in relation to the object and methods of the census, accounts for the greater part of the former, leaving but a small residuum of reasoned mistrust and suspicion. Positive ignorance, or incapacity to grasp the meaning of the schedule heads and instructions, is an altogether different matter. The prejudice against the census which Dr. Longstaff has shown us prevailed in this country at the end of last century, has long since died out, at least in the virulent form which led an opponent of the measure to deem it incredible that any one could be found so presumptuous and abandoned as to initiate the proposal, which, again, was stigmatised as totally subversive of English liberty, &c., &c., terms which in our day are exclusively reserved, I believe, for proposals regarding denominational education. Nor, moreover, will the present Home Secretary think it worth his while to quote, as did his ancestor, a general expectation in Newcastle that the enumeration would be followed by dire pestilence and other misfortunes. In India, except among the wildest tribes, there has been a marked softening of public opinion even within my own recollection. Rumours, of course, there are, and always will be, as to the cryptic but probably malignant intentions of the Government of making the census an approach to the pockets of the lieges, but the only well-founded prejudice I can call to mind is with reference to recording names and ages of the young women of the household among certain high classes, with whom domestic privacy is a matter of social honour. Our rules, of course, take this into consideration. Nevertheless, the formal asseveration that no use is made of the return of individuals, but only of the community in the mass, is not, any more than in Europe, quite sufficient guarantee. There is a suspicion in some continental countries that ages are connected with military service rosters, and that the return of business details is collated with that of the property tax. Even in England, minute details as to employment savours to the British workman of "poll-prying," whilst among the fair sex there is said to be a still extant prejudice against a too scrupulous handling of the truth in the matter of ages.

But perhaps the only real prejudice that remains relates to a question which has grown to be one of practical administration, and probably for this very reason the feeling has increased in strength. I refer, of course, to the return of religious denomination. This item has been for some time a feature in the Irish schedule, and though in 1891 the return was made optional, events showed that in a very small number of instances was the information withheld. It has been frequently suggested by this Society and by other authorities that the return would be useful in this country also, but Mr. Courtney's Committee of 1890 reported that though from a statistical point of view the information was desirable, the Committee, mainly for political reasons, found themselves not in a position to make any recommendation regarding it. Judging from what has since taken place, it seems as if the political opposition to giving a precise statistical form to what is now a matter of vague controversy, is increasing with the use that might be made of that information in solving admitted administrative difficulties. In few other countries does this objection exist, and in several the return, combined with a few other social facts, is evidently of considerable practical value. In India, where the great distinctions of creed are similarly of administrative moment, there is fortunately no prejudice against the return. On the contrary, I have often found a certain pride in nonconformity with a vulgar orthodoxy; while in certain towns in the north, where several forms of faith are at constant variance, occasionally finding vent in violent outbreaks, the representation on municipal bodies has been fixed, not by locality, but by creed. I am not in a position to set forth what may be the sentiments of the unorthodox in the south-east of Russia, but as the official attitude towards the "come-outer" in those parts is, to put it mildly, discouraging, the return is likely to err on the side of understatement. Our colleague President Troinitski has not as yet, however, got beyond the letter A in the publication of his results, and Archangel and the Amur provinces are the only volumes we have had the opportunity of perusing. It occurs to me, also, in connection with the prejudice that may warp a census return from the strict truth, that the controversy as regards the return of language in Wales on the last occasion may have its counterpart in other countries where nationality has entered into an acutely political phase; especially if a less developed tongue be in danger of obliteration by one more suited to modern requirements, and has to rely for its literary support upon the products of the past, or the factitious and artificial use of it in the present day for the purpose of emphasising distinctions that are tending towards elimination.

As to the ignorance that either cannot appreciate what is wanted in the return, or does not possess the information, all that need be said is that "custom cannot stale its infinite variety." It crops up in the most unexpected way and from the least expected quarters. It may take the form, as in the record of age and occupation, of a tendency to generalise, favouring multiples of five in the one, and wide or comprehensive terms in the other. Or, again, it may enter into minute details which equally obscure the real fact, as where a village only is entered as the place of birth, or, in India, a purely local and colloquial title of a language, or, further, a qualifying and generally deprecatory remark against an entry of an infirmity. There are other notorious pitfalls in the path of the census, but those I have quoted are enough to illustrate my point, namely, the serious limitation which ignorance and prejudice place upon the scope of the inquiry as it is conducted here and in our colonies and dependencies.

Some people seem to think that you have only to ask a question on the schedule, and you will get the information. I doubt if you will even get an answer to any but the simplest in a sufficient proportion of cases to make the return of any good. I was myself asked by an enthusiastic champion of total abstinence to add a column at the end of the schedule (after or with infirmities), to the following effect:—"Are you in favour of the total prohibition "of the sale of intoxicating liquors? answer yes or no." A few weeks ago, too, I noticed in an evening paper the suggestion that four questions should be added to the British schedule, relating to one's proficiency as a shot or horseman, also that of one's male offspring. These suggestions manifest almost as optimistic a confidence in the plebiscite as M. Paul Deroulede professes. There is no room for opinion in a properly drawn schedule, though unfortunately it has a tendency to intrude in a few particulars, and the question is how, in Mr. Kruger's classical phrase, to "damp "the trek."

Of the three main divisions into which the usual subjects for inquiry fall, vital, industrial, and economic statistics, the first named invariably yields the best results in point of accuracy, since the questions involved take into account none but immediately personal considerations. Setting aside house accommodation as partly recorded on the responsibility of the enumerator, we may consider sex, age, and civil condition as the primary facts to be ascertained, and on these rest our whole superstructure of vital returns. The addition of infirmities, to the extent adopted in this country and in India, is more a concession to precedent than evidence of absolute facts, since the results are used chiefly for comparison with those collected on the previous occasion, on the assumption that the inaccuracy is about the same in scope and character in both cases. The enumeration of those incapacitated temporarily by illness, carried out in Ireland, does not seem worth the trouble, although logically connected with a return of the occupied. Birthplace, too, especially in combination with age, has its place in sanitary analysis, but, on the whole, it may be considered to be rather of the economic class, as indicating migration. Unfortunately it is not infrequently mixed up with nationality, and this, however suitable for inquiry from an ethnic standpoint, has a background of political status about it which marks it suspect. Our sub-committee, however, have suggested an extension of the instructions which materially widens the scope of the results, though it fails to meet all the defects specified in the last census report.

In some enumerations a place is found for the record of the ability or otherwise to read and write more than one's own name. We adopted this course in India, with the somewhat unfortunate addition, as it turned out, of those under instruction. In this country there is no requisition for this fact, though in Ireland it is recorded and supplemented by subsidiary inquiry. The objection is the great probability of over-statement of the literate, especially among the elders, who will not acknowledge themselves in default before the rising generation. I agree with Dr. Longstaff that the information would be interesting if it could be obtained with approximate accuracy, but the contingency is remote.

Passing over social grades, which bulk largely in the Russian tables, and caste, which may be left to my successor in India, as it cannot be reproduced in a statistical form elsewhere, and language, which is here only a bone of contention in parts of the Celtic fringe, I reach the main battlefield of the schedule, the question of occupation or means of subsistence. The leading point which the schedule-framer has to consider is whether the aim is simply industrial or also economic. Are only those who work or enjoy an income to be returned, or is the supporting power of the occupation or income to be recorded, and those who do not work or have no independent income be relegated, under the heading of dependent, to the occupation of the person who supports them. The elaborate attempts in 1891 to get a return of employers and employed by means of separate columns, to be filled by crosses (in ominous resemblance to a polling card), turned out so far a failure that no comment was made upon the results in the official report. The abuse of vague terms in filling up the occupation column has been already referred to by me, and, on the whole, the results justify the decision of Dr. Ogle, that detailed information as to the industrial organisation of the country cannot be obtained by the machinery of an ordinary census. My experience on the two last occasions in India has brought me to the same conclusion. It is on very broad lines only that the census can deal with this intricate subject. It may, however, form the base of further inquiries by subsidiary methods such as those followed with success by our colleagues, Miss Collet and Mr. Charles Booth, but the raw material contains but little ore for direct manipulation. I say nothing here on the still more controversial subject of classification, at which all of us who have had a hand in census-taking have had their fling, I myself having been a frequent and vigorous offender. It is not the method of classifying alone, however, that is responsible for one of the most annoying defects in the results, namely, the want of distinction between maker and seller; nor, indeed, is it always the original record that is in fault, but the confusion of the two functions is an actual fact, and in the Indian census work we have had to recognise this, since it is one of the main features of the rural economy of the country. Then, too, the troublesome person with several means of subsistence, who will not record his view of their respective importance to his domestic economy, has yet to be satisfactorily tackled. This problem was simplified in India by only recognising occupations combined with agriculture, the enormous predominance of that mode of livelihood justifying the selection. This would not, of course, be the case in Europe.

I have now reached the end, I hope, of the list of questions that appear to me to be suitable for a strictly synchronous enumeration, and I have set forth, so far as my experience extends, the means which seem best adapted to getting them answered correctly. The use to be made of them when garnered does not fall within the scope of my present subject, and, in any case, I should have awaited the final report of our sub-committee before expressing my own views on this matter. There is one collateral point, however, which I am reluctant to leave altogether unmentioned, and that is our persistently reiterated request for a quinquennial census. In our representations we have with us the leading actuarial associations, and that important body of energetic enthusiasts, the medical officers of health. Census after census has shown the inadequacy, in the case of small populations, of the most careful estimates and computations after the first two or three years of the decennial interval. I do not think our Society has ever pressed for an enumeration in the same detail as that required every ten years, but the minimum of sex and age would serve the purposes of stock taking, as Sir Edwin Chadwick used to call it; and the only addition which I have ever suggested, and then only tentatively, is that of birthplace, as a test of the drift of population to the towns, if such drift there be. I have never, moreover, advocated the intermediate enumeration of India, where progress is comparatively slow and regular, except when, as in the present intercensal period, famine has been unprecedently prevalent. Nor, again, does there appear sufficient reason for so frequent enumeration in the States, where vast stretches of country have still to be filled up. But here, as I say, experience shows us constant ferment, shifting of local centres of gravity in the population and changes in life values, all needing the definition afforded only by the simple enumeration I have specified. The obstacle, we recognise, is at present a serious one, more serious, indeed, than in 1890, when Lord Welby sate at the Treasury and cast forth his ice like morsels on us. Five years hence, however, the prospect may be more rosy, and hope springs eternal in the persistent breast of a scientific body.

A further topic, not far apart from the above, is the possibility of establishing a permanent census staff, since a general statistical office seems an ideal which is not likely to commend itself to our rulers, and the masses of valuable statistics that issue periodically from various sources must go un-coordinated to the end of time, except when some energetic Fellow of this Society takes off his coat to grapple with some special phase of statistical life, and gives us the result.

I have considered the census question as more or less a national one, using India only for illustration, and omitting reference to the question of international comparison, with which I dealt in the *Journal* of June, 1898. At the last Statistical Congress, however, I had the opportunity of crossing swords again with our optimistic friend, Dr. Körösi, on his pet subject, and retired impenitent and unconvinced, even though several of our colleagues of repute declaimed against the ultra-conservatism of our statists, who, with the American census authorities constitute, I was told, the *bêtes noires* of science. Our conservatism, I gather, consists in the habit of looking first to the foundation, and only when we are satisfied with it do we launch into the showy superstructure on which the attention of too many of our continental fellow-workers is concentrated. At the same time it certainly can be brought against us that we have never yet worked up a general compilation of the results of the census in its various branches for the empire as a whole, reviewing the differences of the climatic and political sections, and bringing home to us another aspect of the Greater Britain of which the majority of us—I wish I could say all—are so proud.

DISCUSSION *on* MR. BAINES'S PAPER.

THE CHAIRMAN (Mr. L. C. PROBYN) said he was not at all an expert on census matters, but he had some knowledge of India and could assure them that the task which Mr. Baines performed in India with such great success was a very heavy one. Mr. Baines had himself pointed out some of the difficulties which beset him, but had not dwelt on the wisdom with which he overcame them. It was not too much to say that if a census in India were not well managed it might be a source of great political danger, arousing distrust and suspicion among a people who were naturally distrustful and suspicious. So far as he knew, there had been nothing of that kind, and he believed that that fact was greatly due to the excellent men, amongst whom was Mr. Baines, who had been charged with the duty of carrying on the census. Though the paper did not, as the Society's papers generally did, bristle with statistics, it conveyed a lesson on what was, he thought, one of the most important branches of statistical knowledge, namely, the statistics of population. It came, too, from a man who had had such great experience of a country whose population was nearly eight times as large as the population of the British Isles, and, in fact, one-fifth of the whole population of the world.

Sir ROBERT GIFFEN said he was very much in agreement with Mr. Baines, and for that reason had not many remarks to make. He wished, however, to express to him the thanks of those present for the admirable paper which he had given them. The Society was much indebted to Mr. Baines for his services generally, partly as Honorary Secretary, and in other ways, and not least was it indebted to him for the various papers which he had contributed to the proceedings of the Society, and amongst which the present would occupy a good place. This paper was full of information at first hand, for Mr. Baines spoke both from intimate experience in the actual taking of a census, and from long continued inquiries and study of census proceedings in different countries. The paper would consequently enlighten a great many students of statistics as to what a census means, how it is obtained, and how its results can be worked up and made use of. He desired especially to express agreement with what Mr. Baines had said as to the limitations of a census. He had had experience like Mr. Baines of the enthusiasm of their continental friends and others. Apparently the opinion was common among many statisticians, that one had simply to put questions in order to get answers as a matter of course. But the longer they had experience of statistical inquiries, the more convinced they were that nothing was more difficult in such inquiries than to prepare and select the proper questions to be put so as to obtain the information desired, and to consider the nature and capacities of the people from whom the answers were expected. When the answers were obtained, much work was still left for those who conducted the inquiry, in the way of comparing and sifting the answers so as to bring out the facts which were sought. In a census the questions had to be put to innumerable individuals, multitudes of them unfamiliar with the filling up of forms and schedules, and this was a final reason why too much should not be attempted, looking at all the difficulties of even the simplest inquiry. He would also like to express agreement with Mr. Baines in what he had said as to the need of special inquiries in the matter of occupations, and in favour of not attempting to do much regarding occupations in an ordinary census. It was quite right to have some sort of count of occupations when taking an ordinary census as to age and sex and civil condition of individuals, but it was not possible to take an elaborate industrial census, such as many people desired, along with an ordinary census. If they were going to make an elaborate inquiry as to industrial occupations, that could only be done by a separate proceeding quite outside the ordinary census and conducted by a different staff. The work here was extremely difficult, and rendered necessary a great deal of local knowledge and information, while too much, after all, must not be expected from the results. From what he had seen of censuses of industrial occupations in other countries, and the great expense that had been incurred, he was not sure that the results repaid the cost, but whether that was the case or not, there could be no question of the danger of mixing up the work with that of an ordinary census, which was essential and indispensable to every civilised community. Another point where he was cordially in agreement with Mr. Baines, and where the Society had frequently expressed itself in the same sense, was in regard to the expediency of a quinquennial census. On economic grounds he was by no means in favour of having a census too frequently, although there were abundant reasons why they might have a count of numbers even in every year in certain localities. At the same time, for many purposes a census at distant intervals was all that was required, and the point was, that the objects to be attained should be carefully considered in fixing the intervals. When this was done, it was found that for such purposes, for instance, as health inquiries, in a country like England, where some localities changed their population in numbers and constitution in a very few years, there was great reason for a local census at least every five years. Otherwise in many cases they would have no sufficient data on which to calculate the percentages, and on which to ascertain what ought to be done in the way of administration. A quinquennial census was not perhaps so absolutely necessary for the country as a whole, because the numbers of the population could be calculated by reckoning the births and deaths from the last census, and allowing for emigration and immigration, but that did not give the local figures, which were so necessary for many purposes. For these they must depend upon a quinquennial census. The Government and Parliament as yet had shown an insufficient sense of the importance of this matter, but, as Mr. Baines had said, they must not be discouraged, and should continue to press their views. This led him to remark on another great defect in our census arrangements exhibited at the present time. We were now within twelve months of the new census, or very nearly so, yet there was no legal power in existence by which that census was being prepared for and arranged. Legally no preparations had been made for it. That was the state of things, which surely ought to be remedied in a great civilised country. If subjects of legislation were estimated at their due weight, surely this subject of the census would not be left uncared for, not merely till the eleventh hour, but almost to the last minute of the eleventh hour, when the work must be undertaken. This defect was connected with yet another defect of a very serious character in the census arrangements, namely, the want of a permanent census office. The census was an institution that had come to stay, and it ought to be provided for by a permanent census law, administered by a permanent census office. Surely it was ridiculous that there should be a permanent office in existence for taking what he might call an agricultural census, the count of the acreage under different crops, and the count of our cattle, sheep, and horses, and that there should be another permanent office for trade statistics, statistics of imports and exports and the like, from which they had returns not merely annually, but every month, and almost every week, and yet that there should be no permanent office for managing the important business of counting the numbers of the people. It was not as if really new arrangements were required to be made at the time of each census; the arrangements at such times must be and were substantially the same. If there were such a permanent office as he suggested, the preparations for taking the census could be begun in proper time with due legal authority, and there would also be time to make those studies of the subject by which the utility of the census itself would be very much enhanced. After the first results of the census were published, the office would have ample leisure for making special inquiries and looking into many matters which were now passed over, and of which the material which had been accumulated was left undigested and unused. He would emphasise the need, therefore, for such an office, and he trusted before long that such an office would be established, with a permanent census law, so as to make it quite unnecessary to have a new enactment every ten years. In conclusion, he would again renew his thanks to Mr. Baines for his paper.

Mr. A. H. Bailey entirely concurred in what Sir Robert Giffen had said as to the value of the paper, which divided itself into two parts, one dealing with the machinery for collecting material, and the other with the material itself. The former part, which had been most elaborately dealt with by Mr. Baines, was, he thought, outside the province of the Society. He agreed as to the importance of a quinquennial census for certain purposes, and was sorry to hear that the Bill introduced into the House of Commons the previous evening contained no provision whatever for it. One of the uses he had himself made of the census was for the comparison of vital statistics. Every week there was published in the newspapers what was called the rate of mortality in the large towns comprising upwards of 100,000 inhabitants, but the deductions from them were likely to be misleading in several cases. The number of deaths was no doubt recorded accurately enough, but the population was computed on the assumption that the rate of increase in one decennial period was the same as that in the previous one. This was by no means the case. Take for instance the suburbs of London and many seaside watering places. These had grown in a very remarkable manner and to an extent quite out of proportion to that of the main population. In respect of such matters as numbers, age, and sex, a quinquennial return would involve a comparatively small expense. The chief concern of the Society at the moment was the forthcoming census of Great Britain and Ireland. He quite agreed with what Sir Robert Giffen had said about occupation, and it would be a total mistake to attempt to do too much, but he thought that the description of occupation should be of some value. One matter which was particularly required was to distinguish between employer and employee, as for instance amongst builders, but it would be, in his opinion, impracticable to distinguish between skilled and unskilled labour. There should also be some clear understanding of the distinction between wholesale and retail pursuits. The term merchant, for instance, had a very different meaning in the city of London from what it had in the city of Edinburgh, where it was really the keeper of a small grocer's shop, the owner calling himself merchant, after the French "marchand." With regard to the census of religions, he thought if that could be included it would be very valuable indeed, even if the filling up of the column were allowed to be optional. He could not understand why people should object to it. The question as to the ages of the ladies was as old as the hills, and he was afraid that for obvious reasons it would never be rightly answered.

Mr. William Buchanan (Registrar of the Kelvin District of Glasgow) said that the suggestions made in the paper had given them all much food for thought. Mr. Grime, who accompanied him, was Chairman of the Joint Census Committee of the Associated Registrars of Britain, and he himself had the honour of being the Honorary Secretary. In endeavouring to ascertain what hopes there might be for a better census this time, he was told by a member of Parliament who had been in close touch with the Treasury, that there was scarcely any hope of a more reasonable grant from that Department; the only hope was in the Statistical Society, and, if there was any improvement in the new census Bill, that would be due to its influence. His colleague and himself differed from most of the gentlemen present, inasmuch as they were actual census workers, and had quite a different experience from those who simply studied the results. If statisticians generally had more to do with the actual working of the census, he was sure they would have far more sympathy with all who had to tabulate and get up the statistics. There was first of all the trouble of getting together 40,000 odd men who, Micawber-like, were always waiting for "something to turn up," and who, probably, were not in situations because they did not deserve to be. The difficulty was as to these men. Government wished as enumerators men of exceptional character, but would not give the necessary grant. Amongst the qualities required of enumerators was certainly courage. He gave several instances where personal violence had been offered to them. The difficulties of census taking were aggravated by the complexity of the areas, more particularly in England. Another drawback common to both countries was the want of a popular definition for the term "house." If a working man were asked, he would say that the room he paid for was his house or his castle, irrespective of its size, and irrespective of whether he entered from a front door or from a common stair, or from a lobby common to a dozen apartments. He was told that the Scotch medical officers of health had been discussing this point at a recent meeting, and they had found it far from easy. The difficulty of definition here was very great, especially if a word had to be used that would apply to both England and Scotland, and so allow of a national comparison. Some persons wanted to include in the census things which it was impossible to ascertain on anything like the present grant. One member of the General Medical Council had told him he wished most to know the amount of air space in each house and round each block, so as to get data regarding the breathing space allowed to each person. Such facts it would be next to impossible to get out of a national census.

Dr. R. Dudfield observed that the subject of census taking was looked at from many points of view, and that what the Government had to do was, if possible, to effect a compromise, which, while perhaps not pleasing all, would satisfy most statisticians. As a medical officer of health, he would like to know at least the number of people living in every street in his parish or district, but he was afraid that was information which the census authorities would not give. Referring to the great confusion of areas now existing, he mentioned that he had recently had lent to him a reprint of a paper by Mr. Arthur Francis Burridge, of the Equity and Law Life Assurance Society. The list of districts tabulated by Mr. Burridge for which the Census (1881) returns had to be tabulated was simply appalling; beginning with "England and Wales," then "England" and "Wales" separately, "North Wales," "South Wales," 52 counties, 198 Parliamentary boroughs, 14,926 civil parishes, 9,107 separate constituent parts of ecclesiastical parishes, 6,958 ecclesiastical parishes and 2,175 registration sub-districts, not to mention many other areas of less importance. Then came divisions more important from the medical officer's point of view. These included 966 urban sanitary districts, 578 rural sanitary districts, and, in addition, 184 metropolitan areas. This confusion was unfortunate in two respects: it greatly increased the labour of tabulation and, he thought, the cost of the census. It ought to be possible to arrive at a unit of tabulation. The unit that he personally should like to see adopted was either the sanitary inspector's district, or at all events the wards of the sanitary area. If from that unit it were possible to gradually step up to the whole country, the work of the census would be greatly facilitated. He was afraid that was an ideal to which it was almost hopeless to attain, but there was a possibility at the present moment of simplifying one part of the country. The Local Government Act of 1899, which would transform the municipal life of London, afforded an opportunity for effecting a considerable simplification in the metropolis. He mentioned the village of Penge as probably the worst example of the existing confusion of areas. He believed that the Government had determined to give effect to the decisions of the Commissioners appointed under the Act of 1899 by a special Bill instead of by Orders in Council. This might afford an opportunity for securing a proper adjustment of the poor law districts, so as to make them coincide with municipal areas, and it might further be possible to secure the readjustment of registration sub-districts and districts, so as to make them coterminous with the municipal sanitary districts. Then there would only remain the parliamentary areas and ecclesiastical parishes. The former would have to be dealt with hereafter in a redistribution Bill. The survival of the ecclesiastical parishes seemed to be of no real utility. He would like to see that Society, in conjunction with other societies such as the Society of Medical Officers of Health, urging the Government to take steps to round off the poor law and registration districts so as to make them coincide with the municipal areas. Accuracy in stating ages could only be reached through the good sense of the population. All they could do was to insist on the national importance of the information, and explain that it would be treated as absolutely confidential. One point which greatly affected the interest of actuaries in the census report was the custom, which he believed prevailed at Somerset House, of justifying the returns by correcting entries from one column into another. The actuaries, with a view to the improvement of the quality of the statistics collected, insisted that the census returns ought to be published exactly as they were collected from the enumerators. He agreed that the scale of remuneration of the enumerators required revision, but feared that the present was not an opportune time to ask Government to sanction increased expenditure. Mr. Baines also mentioned particularly the question of the training of enumerators. He (Dr. Dudfield) desired to call attention to a paper by Mr. Meriam, published in the January number of the "North American Review," which gave details as to the training of the staff employed by the United States for this work. The United States in this matter set an example upon which we might well try to improve. He dwelt upon the advantages of the card system, and cited his own experience to show that the danger of loss of cards was not sufficient to outweigh the undoubted advantages of the system. The card system was immensely useful and facilitated work greatly. Of course for census purposes there would be a question of distinguishing the various batches of cards, which would to a certain extent help classification. It had occurred to him that it would be possible to do that by cutting away the sides of the cards in various patterns. He was himself about to put this suggestion to a practical test. The London Medical Officers of Health had been especially badly served in the last census. In the provinces each township of 50,000 inhabitants had the honour of having a complete table of the occupations of the inhabitants, but in London, where the populations of the constituent districts varied from 120,000 to 180,000, they were tabulated in five groups of districts, north, south, east, west, and central. Paddington had a population of 118,000 at the last census, but no returns were available of the occupations of the inhabitants. He understood that it was not intended to perpetuate this blunder. Medical officers of health were interested in the census of occupations, but he personally inclined to the view that the occupation census should be taken apart. The value of the information as to the number of rooms in the dwelling house was minimised by the fact that nothing was said as to the size of the rooms, consequently a standard of overcrowding of more than two persons per room meant nothing. He thought a certain amount of information as to the housing of the people might be obtained from the landlords. The need for a quinquennial census was emphasised by the many cases of serious error which had arisen during the last decennium. Another source of error was no doubt due, especially in high class residential districts like South Kensington and South Paddington, to the fact that the last census was taken immediately after Easter. In South Paddington, according to the census returns, the population had decreased in the interval between 1881 and 1891 at the rate of 364 per annum. At the intermediate census of 1896, taken practically at the same time of the year but before Easter, the enumerated population, instead of showing a decrease of 364 per annum, showed one of only 35 (for the five years 1891-96). He believed, therefore, that at the census of 1891 the population of South Paddington was considerably under-estimated. In conclusion, he stated that there was a reference in the last report of the Society dealing with the census of 1901, which he would like to have cleared up, touching the definition of "story" and "tenement." The reference, which he presumed was to the Act of 1890, mentioned a definition in "Section 3." Section 3 of the Act of 1890 did not contain any such definition. Presumably the reference to "Section 3," and another to "Section 5" in the succeeding paragraph of the Committee's Report should read "Sub-section 3" and "Sub-section 5" of the 5th Section.

Mr. NOEL A. HUMPHREYS remarked that statisticians were often accused of being more anxious to pile up figures than to assure themselves that their figures really represented facts. This tendency had a direct bearing upon the subject of census statistics now under discussion. He congratulated Mr. Baines on having had the courage to bring forward his views, in which he himself almost entirely concurred, as to the distinct limitations of a successful census. These limitations, of course, depended very much on the conditions under which the census was taken. The census in England was an attempt to count the population on a single night, and all the questions submitted in the schedule had to be answered by householders or occupiers, of whom a very large proportion were only half educated. The questions should, therefore, not only be limited in number, but should be of such a character that the average householder would be able, without much difficulty, to answer them correctly. Secondly, it was obviously necessary not to include any questions to which there might be a temptation to give a false answer. He would like to point out that it was not only the statistician who was at fault in trying to break through these limitations; the politician also yielded to the same temptation. At the time when the last census was being discussed, the questions relating to the language spoken in Wales and Monmouthshire were introduced on political considerations, and the natural result followed. Previous to the census, in many districts there was a systematic appeal to the patriotism of Welshmen, asking them to use the census as a means of declaring and proving their nationality. Consequently the figures when tabulated and published were obviously and entirely untrustworthy. In many cases that were investigated, people who habitually used the English language in their shops and market places, and who even preached in English, returned themselves as only speaking Welsh! This was but the natural result of bringing into the census, under the conditions which govern an English census, questions which invited false answers. He sincerely hoped that this experiment would not be repeated, and that no proposal would ever be seriously made to use the census in connection with any proposed scheme of old age pensions, for collecting information as to the amount and sources of income of the aged poor, or of their connection with

Poor Law relief. As to an intermediate census, he felt very strongly with Mr. Baines and Sir Robert Giffen the urgent need for the necessary provisions in the Census Act for a simple enumeration in 1906, dealing with population, sex, and age. This was the fourth time that a representation upon this subject had been made to the Government by this Society, three times without result, and he could not agree with the reader of the paper in his optimistic opinion that the proposal was likely to be more successful if again pressed in five years time. It seemed to him that if they failed now to secure provision for an intermediate census in the present Census Bill, it would be at least ten years before the question could again be brought forward with any chance of success. He hoped, therefore, that the Society would use all the influence it possessed—and he thought that the Society might claim great influence on such a point—in conjunction with county councils and other local authorities in urban and rural districts, including medical officers of health, to convince the House of Commons and the Government that an intermediate census was of real and vital public interest. He thought that if the Government could be convinced that there was a genuine demand for a quinquennial census, there was some chance that the necessary provision might be added to the Bill, even though it had not yet found a place therein. All who recognised the undoubtedly beneficial effect upon public health progress due to the national system of vital statistics inaugurated by their former distinguished president, Dr. William Farr, would also recognise that the value of statistics depended upon the accuracy of the basis upon which those statistics were tabulated; and looking forward they must acknowledge that without a trustworthy population basis they could not hope for the continuance of that satisfactory rate of progress which had prevailed during the past sixty years. One point in favour of this proposed addition to the Census Bill at the present time was that the provision for a simple census in 1906 would lead to no additional expense for five years. Moreover, the proposed simple intermediate census, judging from the cost of the London census in 1896, would probably not cost more than 60,000*l.* for the whole of England and Wales. That surely was not a large sum to set against the improvement in the value of the costly statistics published weekly, quarterly, and annually by the Registrar-General, to say nothing of the local statistics issued by medical officers of health throughout England and Wales.

Mr. LAURENCE GOMME said it appeared to him from the paper they had just heard that poor statisticians, who required so much, were met with the initial difficulty that the information they wanted could not in all cases be accurately obtained. Admitting that there was a great deal in the point, he thought that that difficulty might be minimised by the method of marking the results. He divided the census into two categories: there was the purely census information, which they were entitled to consider as being entirely and absolutely accurate, and there was what he might call the indicative information, which might not be accurate in detail and which required to be supplemented. We were accustomed to do things in this country in a way which not only increased expenses, but was actually calculated to hinder the attainment of the full objects sought. To take the census, it created all sorts of curious things. It created a registration county and all sorts of other units, but it did not give what Dr. Dudfield had alluded to, namely, an initial "locus." There was a unit called, he believed, a "sub-registration district," whereas the old English word "tithing" would, he thought, be more appropriate. But if they had a sufficiently small unit to begin with, thoroughly well identified on our maps, the adding of the units together, in order to get the larger units of the country, would answer all practical purposes of statistics. With regard to what he had ventured to call indicative results, even if they did not get complete accuracy, if the imperial statistics were laid open to the localities, these latter would be enabled to supplement the information in any direction where it was faulty. But after the statistics had once been tabulated by the imperial authorities they were practically buried. After going to the expense of an enormous organisation for the purpose of creating a census, it seemed almost unpardonable to let the matter stop there, and to make no use of the local organisations. He urged the inclusion of more questions in the schedule, in order that certain valuable indications might be afforded. For example, the census told them the sleeping population of London, and the occupations of the people at their sleeping centres. If they had proper statistics of the occupation centres as well, they would be able to get the day as well as the night population. He suggested that such information should be collected, and believed that if collected the results would be sufficiently accurate to be valuable. Another extremely important matter to put in the census was length of residence. It would be extremely important for very many scientific reasons to know whether the ancient population of centres in England still remained on those ancient centres. Information as to ownership, or otherwise, of residence was another factor which they might fairly ask should be obtained, and in connection with occupation centres the means of getting to and from the place of occupation was another very important detail. His suggestion was not that the census authorities themselves should tabulate this information, but that they should, while taking the census, collect it on behalf of and at the expense of the local authorities and leave them to make use of it. He distinguished this information to be collected contemporaneously with the taking of the census from that which properly belonged to the census itself, and they could be always kept apart by the use of different forms of return. As Mr. Baines knew perfectly well, in the magnificent census of the Punjab even anthropological data were collected. He would hope that at some future time information under that head might be collected in this country. Statisticians were collecting such information in America and in Germany, and the census authorities were collecting it in India. That again could only be indicative, not actual information. With reference to the religious census, he rather agreed with Dr. Dudfield that it would not be of much use in the present day, but on the other hand he did not altogether agree with Mr. Noel Humphreys in his remarks as to the language census. He admitted the failure of the inquiries as to the use of the Welsh language at the last census, but he maintained that as the public became used to the inquiry, the accuracy of the replies would become gradually greater. One of the things they would get if matters were elaborated in the way suggested, would be the separate census which Dr. Dudfield had asked for, and which would be of the greatest importance in very many ways. He wished to put himself forward as one who cried for more information as against those who spoke of limitations. In this era of civilization they should at least be able to collect information about the people, even if there were a difficulty in publishing all that information in one volume.

Mr. W. Grime (Bury, Lancs.) said that, like Mr. Buchanan, he was very grateful indeed for the courteous invitation they had had to attend the meeting. Like the members of the Statistical Society, the Registrars were dissatisfied with the results of the census, and not only wanted more information, but wanted it recorded more accurately. They wished that the present conflicting and overlapping areas could be simplified, so that the enumerator and the registrar could work satisfactorily and produce better results. One difficulty had been fully recognised, namely, that the enumerator was a man casually picked up and only employed for three or four days at a very low remuneration. In America the enumerators were drilled previous to the census, but here they had no training or preparation. It was impossible for the Registrar to instruct his enumerators in the time at his disposal. A good enumerator must be something more than an intelligent man. He must be a man such as a public officer, whose ordinary duty was to visit the houses of the people, and therefore in touch with the people, and acquainted with the houses he went to enumerate. He concurred in the suggestion that a simple schedule and simple definitions were needed. They had not merely to draft a schedule which would suit the average mind, but such as would be understood by the least intelligent.

Mr. N. L. Cohen, referring to the demand of Mr. Gomme that better use should be made of the machinery of the census for statistical purposes, said he had been much impressed by the pregnant sentence in which Mr. Baines emphasised the great importance of a permanent provision for the collection of normal statistical information needed for State purposes. He was very glad to hear Sir Robert Giffen give the authority of his judgment and experience to the idea of a permanent central statistical office. But they needed not only a central office, but also a system of local record offices to focus the statutory statistics and data prescribed by existing Acts of Parliament. There were separate authorities for the record of births, deaths, and marriages, for taking statistics relating to school attendance, of the facts and data bearing on the right to the three franchises, Parliamentary, Municipal, and for School Boards, for recording notifications of diseases, and for the assessment and collection of taxes. He believed there was also another authority which had cognisance of the registration of ownership of real estate. Sooner or later it would be realised that a resolute effort was needed to focus all these local authorities in each district at one local office, which would also provide the nucleus of the machinery for the decennial or quinquennial censuses. Further, it was probable that the suspension of the ballot year by year for service in the militia was not dictated by questions of policy alone, but also by the fact that there was absolutely no machinery in England by which the individuals composing any section of the population suitable to be called on for military training could be identified. He would venture to commend that fact to the Census Committee as an opportune argument when they were pressing for greater facilities than were now afforded for the collection of statistical information or for the organisation of a quinquennial census.

Mr. Baines, in replying upon the discussion, said he was highly gratified by the cordiality and attention with which his paper had been received, and by the instructive discussion to which it had given rise. One of his main objects, indeed, had been to elicit the views of those who, like the visitors from the North, had taken actual part in the operations, and could appreciate accordingly the labour and trouble of preparation and of arranging the details of what followed the census. As he has drawn so largely upon his experiences of an Indian census, he was glad to see among the audience one of his most able colleagues in that operation, Mr. Harold Stuart, a Fellow of the Society. Nevertheless, he had used his illustrations from the East merely to bring home facts to be grappled with in this country. As Mr. Bailey had truly said, the machinery of a census was less interesting to statisticians than the results, but unless the former were adequately understood, the relation to it of the latter, which was as close as that of the output to the machine in industries, was almost certain to be overlooked. He must excuse his omission of any questions that might have been raised, on the score of want of time, not intentional discourtesy or wish to evade awkward corners, though he would answer all he could. As to the distinction between employers and employed, he fully agreed with those who insisted upon its importance, whether from the economical or the statistical standpoint, but after what Dr. Ogle had reported in 1891, he feared that the want of attention to the instructions, and the casual abuse of crosses, not unknown even in the ballot, would invalidate the return on this occasion also. Similar imperfection too would probably mar any return that was sought of religious denomination, even though the declaration were to be left to the option of the householder, since non-statistical considerations came into play and rendered the figures incomplete and misleading.

He could not agree with Mr. Gomme that it was the novelty of the inquiry that spoiled the return of Welsh in 1891, as from what had occurred beforehand, in Parliament and out, there was clearly a more or less intelligent anticipation of the use to which the return was to be put. Such considerations were not in operation in respect to Gaelic in Scotland or Erse in the sister kingdom. He was not sure, however, whether in 1901, judging from what he had heard in the House of Commons on a certain occasion, it might not be part of the plan of campaign to exaggerate the prevalence of Erse, for purposes similar to those in view in regard to Welsh ten years back. The Society would heartily appreciate what had fallen from Mr. Grime and Mr. Buchanan on matters with which their acquaintance had been so practical. He would only disabuse Mr. Buchanan of the idea that the three days for which the Indian officials were turned out for census, were in anything but name "holidays," since in that short period all the essence of three months' training had to be rubbed into them, at high pressure. Dr. Dudfield had referred with some rancour, which he (the speaker) shared, to the apparent loss of population in London owing to the census of 1891 being taken at Easter. This loss was made apparent at the 1896 census, and the date proposed by the Society, with other bodies, for 1901 being Palm Sunday, the enumeration had a better chance of turning out correct, since it would precede the holidays by several days. The question of getting the population of streets tabulated, also recommended by Dr. Dudfield, was not beyond the means at the disposal of the Census Office, provided the units of enumeration were small enough to be fitted, like mosaic, into any of the larger areas for which population figures were wanted. The accuracy of card tabulation was beyond doubt, if the clerks using the cards were part of a permanent office establishment. It was with regard to the casual boy employed for the few months of the operations that he feared the frequency of loss or misplacement of cards not passed about under receipt, or ringed up together at each remove. He now turned to the additional subjects on which information was suggested as obtainable from the schedule. As to this, the chief offender was his friend Mr. Gomme, who verged towards the type of continental statist of whom mention had been made in the paper. A little incomplete and imperfect information was not only of no use, except for imperfectly based inference, but was often misleading. He recalled attention to the two canons he had suggested as applicable to census work, viz., to avoid, like sin, all that could be got by other means, and all that the householder was likely to be unable or unwilling to answer correctly. Thus, the question as to the ownership or occupancy of the house was one which called up opinion, sentiment, interests, and, possibly, visions of litigation. The place of occupation, again, was, in London for instance, almost invariably outside the area of enumeration, but the return, besides being very complicated, would be, in the case of the masses, of little durable value. The length of residence or settlement in the place wherein enumerated, too, presented little difficulty in cases where the population was well established, and where, accordingly, the information was of less importance. But there must be taken into account a large crowd of migratory householders and heads of families whose movements were impulsive and mysterious, so that the demand for a record of the sort proposed would doubtless raise in their mind an interminable vista of moonlight flittings, which, for personal and pecuniary reasons, it was desirous to keep veiled by mendacity or reticence. Lastly, there was the question of overcrowding, especially at night, and this, he thought, was undoubtedly a matter for special, rather than synchronous, investigation. Such inquiry had been undertaken by both the Dr. Dudfields, engaged in sanitary work in important London districts. Those responsible for the schedules in the worst houses of this class had an interest in understating the numbers of their lodgers. All these topics were of undeniable moment at the present time, and should be tackled in the most suitable manner. Similarly with the burning political question of old age pensions. He sincerely trusted, as a statist, that no connection would be hinted at between the census and any scheme of endowment of age of that sort, otherwise the return of ages of 60 and upwards would be scarcely worth having. He was delighted at the thoroughgoing support which had been given to the proposal for a quinquennial census, but it should be clearly understood that the society did not suggest that on such an occasion the full schedule should be used, but that sex and age only should be recorded and tabulated. This would be simple and proportionately cheap. Mr. Humphreys had referred to his (the speaker's) rosy optimism as regards the Census Bill. It must be remembered that the paper was written early in the month, and the Bill was only the product of the preceding night. He still hoped for the best, which was not yet in the Bill, he believed, though with the combined efforts of statists, actuaries, and medical officers of health it might soon be found there. His optimism was limited to such demands upon the public as experience had shown could be, not what might or ought to be, got with accuracy: this he considered a moderated optimism.

MISCELLANEA.

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I.—*On the Representation of Statistics by Mathematical Formulæ.* (*Supplement.*) By Professor F. Y. EDGEWORTH, M.A., D.C.L.

THE writer of this series of articles hopes that it is not too late to mend some passages by adding further references and elucidations.

Apropos of the *a priori* reasons for expecting the normal law of frequency to be set up (Article I, *Journal of the Royal Statistical Society*, vol. lxi, p. 672, and Article IV, ibid., vol. lxii, p. 551), reference ought to have been made to the *locus classicus* on the subject in the paper on the "Method of Least Squares," which Mr. Glaisher contributed to the *Memoirs of the Astronomical Society* in 1878; the earliest statement known to the present writer which adequately recognises the philosophical, as distinguished from the mathematical, grounds for the prevalence of the law in general statistics. Mr. Glaisher says (*loc. cit.*, p. 105):—

"We shall obtain the same law $e^{-h^2\epsilon^2}$ if we regard each actual error as formed by the linear combination of a large number of errors due to different independent sources. This latter point of view of the nature of an error seems most natural and true. In any observation, where great care is taken, so that no large error can occur, we can see that its accuracy is influenced by a great number of circumstances which ultimately depend on independent causes: the state of the observer's eye and his physiological condition in general, the state of the atmosphere, of the different parts of the instrument, &c., evidently depend on a great number of causes, while each contributes to the actual error. The above supposition not only seems to be a true one, but also to include all that can be asserted with anything approaching to certainty of the nature of an error. . . . Unless the errors $\epsilon_1\,\epsilon_2\,\dots$ are very small, we are not entitled to replace $\epsilon = f(\epsilon_1, \epsilon_2 \dots \epsilon_n)$ by $\epsilon = \mu_1\epsilon_1 + \mu_2\epsilon_2 + \dots + \mu_n\epsilon_n$, ϵ_i being an elementary error supposed subject to the law

$\phi_i(x)$ [*any* law not in general *the* law of frequency] . . . It is for this reason no doubt that the numbers in so many statistical tables follow this law; the deviation from the average being due to the combined action of a very great number of causes."

It should be added that a smaller number of causes than might have been supposed is sufficient to produce some approximation to the normal law. Peradventure there be five elements, each fluctuating according to a law of frequency quite different from the normal one; yet the combination of those elements is apt to present some appearance of approximation to the normal law. This is shown by the mathematical experiment which Dr. Burton tried in an article "On a Physical Basis for the Law of Error," in the *Philosophical Magazine* (1889, vol. 28, p. 483), combining three or four elements which obey a law of frequency so far removed from the normal law as to exhibit no convergence towards the central value. Let the shape of the frequency locus pertaining to an element be that of a rectangular wall; the corresponding equation being $y = \text{N}\frac{1}{2a}$; where N is a number of observations, $2a$ the range over which the fluctuation of the element extends, and the central point of the range is taken as origin. Now let a second element with the same unpromising law of frequency be superadded to the first. The law of frequency for the sum—as determined by the general rule which the present writer has given (*Philosophical Magazine*, 1883, vol. 16, p. 301), or by the particular method which Dr. Burton has employed in the passage referred to—is $y = \text{N}\frac{1}{4a^2}(2a \mp x)$; where the upper or lower sign is to be employed according as the positive or negative side is dealt with. The rectangular wall has been converted into a triangular frieze, convergence to a centre having already set in. Superadd now one more element of the same character; and we shall have a very respectable approximation to the normal shape. The central part of our compound curve consists of a parabola concave to the abscissa, viz.,

$$y = \text{N}\frac{1}{8a^3}(3a^2 - x^2),$$

as far as the distance $\pm a$ on either side of the centre. At that distance from the centre, and at the height from the abscissa $\text{N} \times \frac{1}{4a}$, the concave parabola joins on to a convex one (having the same *parameter* as the first named), viz.,

$$y = \text{N}\frac{1}{8a^3}\frac{1}{2}(9a^2 \mp 6ax + x^2);$$

the upper or lower sign of $6ax$ being taken according as the positive or negative side is dealt with. The convex part of the locus comes to an end at the distance from the centre $3a$ where it touches the abscissa. Already the familiar form of the *gensd'arme's hat* begins to make its appearance. The curve changes from concave to convex at a distance from the centre which is a third of the utmost possible distance: just as the normal curve has a point of inflexion at the distance on either side of the centre $\frac{1}{\sqrt{2}}$, say 0·707, that is about a third of the range within which the group is practically confined—less than a two hundredth part being outside that limit. It is true that the change from concave to convex is abrupt, the tangents of the two curve-branches at their junction not coinciding, as in the case of a point of inflexion. But this sort of abnormality may well be masked by the discontinuity of concrete statistics (*cp.* Article I, *Journal of the Royal Statistical Society*, vol. lxi, p. 696). Quetelet might have claimed a set of statistics obeying our law as an example of the normal law of error.

This sort of verification obtained in the first instance for the summation of elements with laws of frequency which are uniform, symmetrical, and independent, may be extended with caution to other functions and elements otherwise related. As Dr. Burton says: "The combination of three or more sources of error of comparable importance gives in general a law of frequency not seriously differing from that of Laplace" (p. 490).

Another verification has been given by the present writer in the *Journal of the Royal Statistical Society* (vol. li, 1888, p. 116). He has found that forty figures, each formed by adding together five digits taken at random from mathematical tables, present a fair approximation to the normal law of frequency.

Further confirmation is afforded by the theorem discovered by Professor Pearson, that the "slope" of the outline formed by a symmetrical binomial has the same equation as the tangent to the normal symmetrical curve, even though the number of observations is small (*Transactions of the Royal Society*, vol. 186 (1895) A, p. 355). For the binomial, though only a particular, is in many respects a typical case of the normal curve.

Moreover, the examples which have been adduced belong to a case which is particularly unfavourable, where each of the elements fluctuates according to a law quite different from the normal one. But, in general, *in rerum naturâ* it is probable that the separate elements do not thus consist, as it were, of unhewn material, but have already, as being themselves compounds, begun to be rounded off into the normal shape. If each of the three component *loci*, in the example given in the paragraph before the last, had been ordinary curves—shaped, not like an academic "mortarboard," but like (a vertical section of) a "billycock" hat—we might have expected the component to form an even better approximation to the normal shape of the *gensd'arme's* hat than it actually did.

But it may be objected, how can a rule which has many and unpredictable exceptions be described as a general law? A parallel may facilitate this conception. It may be affirmed as true in general that the digits 0, 1, 2, &c. . . . 9 tend to occur equally often in common experience. There are those who regard this proposition as *a priori* evident (*cf.* Venn, *Logic of Chance*, edit. III, pp. 111, 241). At any rate, it is supported by considerable experience. If the case were otherwise, it could hardly have failed to attract the attention of arithmeticians. The present writer, having taken some 3,000 digits from miscellaneous mathematical and statistical tables, found that they behaved in every respect as if the different values, 0, 1, &c., 9 were equally probable (*cf. Journal of the Royal Statistical Society*, Jubilee vol., 1885, p. 193). He has used with advantage a rule based on that hypothesis: that the sum of a column of n digits is equal $4{\cdot}5 \times n$ on an average, with a probable error of $0{\cdot}4769 \ldots \times \sqrt{16{\cdot}5 \times n}$. Of course exceptions to this rule will occur. If the figures to be added were made up of the items in a solicitor's bill, the shillings and pence being expressed as decimals of a pound, it might be expected that the recurring decimal 0·333 . . . would exercise a disturbing influence. The *first* digit in one of the rows of a page of logarithms does not fluctuate independently of the others. Still, in general, for the great mass of constants and coefficients in nature, the proposition appears to hold good. This is the sort of generality attached to the normal law of error. It is like the rule of *laisser faire* in Political Economy, presumed to be valid in the absence of evidence to the contrary.

No doubt the importance of the rule depends on the frequency of the exceptions. They are less frequent than is commonly supposed. They are supposed to be frequent because the normal type is conceived as a symmetrical curve, and recent investigations have shown that most groupings of concrete statistics are somewhat unsymmetrical. But the normal curve considered as approximately representing the result of numerous independently fluctuating causes, is only to be regarded as symmetrical so long as we confine ourselves to a first approximation. When we take in a second approximation the limiting shape becomes unsymmetrical.

It is submitted that when account is taken of this character of the normal curve, a good many moderately asymmetrical groups which seemed to be at variance with the law become reconciled to it. (*Cp.* Article IV, *Journal of the Royal Statistical Society*, vol. lxii, p. 550.)

This view is confirmed by taking into account the *third* approximation to the normal law of frequency, which is alluded to in the last paper (ibid., p. 549, *note*). This third term is made up of two parts, one due to the mean cube of deviation not being zero, as it ought to be according to the first approximation to the normal law, according to the formula connected with the names of Gauss and Galton, and one due to the mean fourth power not being equal to $\frac{3}{4}c^4$ (where c is the modulus), as it ought to be according to the same abridgment of the law. If y_1 is put for the first approximation, the ordinary symmetrical law of error, then whereas the second approximation is of the form $y_1\,(1 + \mathrm{j}\theta))$, the third approximation is of the form $y_1\{I + \mathrm{j}\theta + [\mathrm{j}^2\,\phi + \mathrm{i}\,\psi]\}$, where j is the mean cube of deviation, divided by c^3, and i is the excess of the actual mean-fourth power of deviation over $\frac{3}{4}c^4$, divided by c^4. The forms of the functions ϕ and ψ—determined by a method which will be stated in a forth-

coming paper, analogous to that which has been stated in a paper in the *Philosophical Magazine* for 1896—are respectively—
$-\frac{5}{3} + 10x^2 - \frac{20}{3}x^4 + \frac{8}{9}x^6$, and $\frac{1}{2} - 2x^2 + \frac{2}{3}x^4$; where x is the distance from the centre of gravity divided by the *modulus*, c in our notation, and $\sqrt{2\mu_2}$ in Professor Pearson's notation.

The taking into account this fourth term may narrow, but cannot well extend, the limit within which the observations may be expected to correspond to the normal law of frequency. For it is a nice point that x, though the third term (within the brackets of the above written expression), is of the order $\frac{1}{n}$, while the second term is of the order $\frac{1}{\sqrt{n}}$, yet the third term may be greater than the second; as may be observed for instance in the case of the binomial when the alternatives form an almost even chance. If j be large, say, above 0·15, then we hesitate to employ the second approximation beyond narrow limits (*cp.* Article IV, *Journal of the Royal Statistical Society*, vol. lxii, p. 549). And even if j be small, it may happen that i is large, and therefore the approximation breaks down at an early stage.

It may be useful to compare the amount of the respective corrections for different values of x (the deviation from the centre of gravity). The correction which forms the second approximation, viz., j × 2θ, is at a maximum when $x = \frac{1}{\sqrt{2}}$, and accordingly $2\theta = (2x - \frac{4}{3}x^3) = 0{\cdot}94$ nearly. For the same value of x the coefficient of i, viz., $\phi = 0{\cdot}58$. It will often happen that 0·58 i is greater (in absolute magnitude) than 0·94 j. Again, at the point $x = \sqrt{1{\cdot}5}$, the coefficient of i is a maximum, its absolute magnitude being i; while the coefficient of j is 1·5. And i may well be (in absolute magnitude) greater than 1·5 j. Beyond the point $x = 1{\cdot}5$, θ continually increases, while ϕ decreases up to a point at which y_1 becomes insensible. The use of the third term may therefore appear particularly safe for this tract. But it must be remembered that we are neglecting terms of the order $\mathrm{i}^2 \times x^8$—not to speak of terms of the order $\mathrm{l}x^5$, $\mathrm{l}x^7$, &c., where l is the difference between the mean *fifth* power as it actually is and what it ought to be if the first approximation were perfectly true, and ulterior with the increase of x.

For example, in the case of the barometric statistics often referred to (Article I, *Journal of the Royal Statistical Society*, vol. lxi, p. 680), i = 0·34, while j = 0·13 nearly. Accordingly the third approximation may be written

$$y_1 \left\{ 1 - 0{\cdot}26\,(x - \tfrac{2}{3}x^3) + [0{\cdot}0165\,(-\frac{5}{24} + 10x^2 - \frac{20}{3}x^4 + \frac{8}{9}x^6) + \right.$$
$$\left. 0{\cdot}34\,[\tfrac{1}{2} - 2x^2 + \tfrac{2}{3}x^4)] \right\}$$

where y_1 is the error function constituting the first approximation, and x is the abscissa measured in tenths of an inch, divided by the modulus similarly measured, viz., $\sqrt{20{\cdot}38}$. The first part of the third term of approximation—that is the first term within the square brackets—shows that the second approximation is safe up to $x = 1{\cdot}5$, so far as the mean cube of error is concerned; the term retained in the second approximation being, for $x = 1{\cdot}5$, $\pm 0{\cdot}195$ nearly, while the term rejected involving j^2 is (in absolute quantity) less than $0{\cdot}05$. Indeed the second approximation may appear *per se*, as far as the mean cube is concerned, safe enough up to $x = 1{\cdot}7$, for which the value of the term retained, $j\theta$, is about $0{\cdot}4$, and the value of the term rejected, $j^2\phi$, is about $0{\cdot}1$. But the disturbance caused by the correction $i \times \phi$ is very considerable, being for $x = 1{\cdot}25$ $0{\cdot}34$ (almost), though at $x = 1{\cdot}7$ it has dwindled to $0{\cdot}28 \times 0{\cdot}34$.

Altogether, having regard to both—or, rather, all—corrections, we must be prepared to find that even our corrected formula breaks down at a certain distance from the centre, often 1·7, sometimes even 1·5, times the *modulus;* leaving a certain percentage of the group, it may be 1 or 2 per cent. at each extremity, unrepresented by any formula. It is regrettable no doubt that a more perfect representation should not be attained; but no better is to be expected if the group is really formed by the co-operation of a not very large number of agencies whose law of frequency is unknown.

As to the improvement in the representation which is effected by taking in the third term of approximation, it is difficult to judge, owing to the fact that the third term of approximation for the area involves definite integrals of the form

$$\int_0^x x^2 e^{-x^2} \text{ and } \int_0^x x^4 e^{-x^2}$$

which have not been tabulated so far as the writer is aware. However, these integrals may be expressed in terms of the well-known integral of the error-function and certain simple logarithmic forms. It may be hoped that some more industrious statistician will perform the requisite calculation for a variety of moderately asymmetrical groups.

Where the normal law of frequency thus conceived is not applicable, we fall back upon other methods of representation. A fundamental distinction is drawn between formulæ which are akin to the normal law "as due to some modifications of the conditions under which the normal law arises" (Article I, *Journal of the Royal Statistical Society*, vol. lxi, p. 675), and formulæ which have not the support of this *a priori* presumption.

Under the former category is placed first in the order of discussion, though not of eligibility, what is called the "method of translation proper." The method is described in the first paper, and applied to the measurements of barometric pressure collected by Professor Karl Pearson in one of his pathbreaking studies. If his calculations are taken as the high water mark of accurate representation, ours may be deserving of attention, since they are as good as his, according to the test which he has himself proposed —the mean difference between the observed and calculated area—

at any rate for the calculation based on three data, the first, second, and third powers of error or deviation. According to the Pearsonian method, which is proper to those data, the mean error in the result is 5·21 per cent. (Article IV, *Journal of the Royal Statistical Society*, vol. lxii, p. 535); it is 5·22 according to the method proposed by the present writer (ibid., vol. lxi, p. 681). A comparison has not been instituted between the results of the respective methods, when another datum, the mean fourth power of deviation, is taken in.

One method of employing those four data has been dismissed as impracticable (Article IV, *Journal of the Royal Statistical Society*, vol. lxii, p. 538) (except indeed when the connection introduced by the fourth datum is very small). Another method has been mentioned too briefly (ibid., p. 549, note 31). In this case there are four—where in the simpler case there were three (Article I, *Journal of the Royal Statistical Society*, vol. lxi, p. 677)—equations to determine; (1) the position of the origin O; (2) the distance, called a, from O to the median of the generating probability-curve; (3) c^2 twice the mean square of deviations for that group; and (4) the mean cube of error, or rather the same divided by c^3, say j. It may be well to write out here the equations which in this extended calculation replace the simpler system given in the first paper (*loc. cit.*). Put, as before, f for c^2, and also now a for $a^2 \div c^2$, then we obtain by parity of reasoning with that employed at p. 695 *loc. cit.*

$$\text{(i.)}\quad [2\mathrm{a} + \tfrac{1}{2} + 4\mathrm{j}\sqrt{\mathrm{a}}]f^2 = \mu_2.$$

$$\text{(ii.)}\quad [6\mathrm{a} + 1 + \mathrm{j}\sqrt{\mathrm{a}}(8\mathrm{a} + 24)]f^3 = \mu_3.$$

$$\text{(iii.)}\quad [12\mathrm{a}^2 + 30\mathrm{a} + \tfrac{15}{4} + \mathrm{j}\sqrt{\mathrm{a}}(144\mathrm{a} + 156)]f^4 = \mu_4;$$

(it being assumed that j is small). Eliminating f, we obtain two equations for a and j, involving the constants called by Professor Pearson β_1 and β_2. These equations may be simplified by substituting for $\mathrm{j}\sqrt{\mathrm{a}}$ new variable q. The resulting equations may then be written—

$$\text{(1.)}\quad \frac{[6\mathrm{a} + 1 + q(8\mathrm{a} + 24)]^2}{[2\mathrm{a} + \frac{1}{2} + 4q]^3} = \beta_1;$$

$$\text{(2.)}\quad \frac{24\mathrm{a} + 3 + q(96\mathrm{a} + 144) - 48q^2}{[2\mathrm{a} + \frac{1}{2} + 4q]^2} = \beta_2 - 3;$$

where $\beta_1 = \mu_3{}^2 \div \mu_2{}^3$ and $\beta_2 = \mu_4 \div \mu_2{}^2$.

The elimination of either a or q from this system gives an equation of the *eighth* degree (!) for the other variable.

The immense trouble required for the complete solution of the system is deterrent; but suitable roots can often be obtained by a tentative process. Take, for example, the statistics of fecundity—or frequency of families of different sizes—cited in the fourth article (*Journal of the Royal Statistical Society*, vol. lxii, p. 539). The values of the mean powers as given by Professor Pearson ("Chances of Death," vol. i, p. 75) are $\mu_2 = 8{\cdot}57276$; $\mu_3 = 18{\cdot}28528$; $\mu_4 = 238{\cdot}8218$. Whence $\beta_1 = 0{\cdot}53$; $\beta_2 = 3{\cdot}2496$. And the median as found by the present writer is 3·76, measured from zero (it being understood that the observations labelled zero cover the space between $-0{\cdot}5$ and $+0{\cdot}5$, and so on of the other compartments). There is found by trial a system of values for a and q which fairly well satisfies equations (1) and (2), namely: $\mathrm{a}=4{\cdot}58$; $q=-0{\cdot}15$. With these values the left side of the first equation becomes 0·50, while the right side is 0·53; and the left side of the second equation becomes 0·3, while the right side is 0·25. A better solution can easily be reached by the proper methods of approximation (Article II, *Journal of the Royal Statistical Society*, vol. lxii, p. 135). Even the present first shot seems to answer well. From the third equation we have $f^2(=c^4)=0{\cdot}9461$; whence $c^2=0{\cdot}9728$; $c=0{\cdot}986$. Thus $a^2=c^2\mathrm{a}=4{\cdot}455$; $a=2{\cdot}21$. The position of O is found by measuring 4·58 to the left of the median —which is at the point 3·76 distant from zero—that is at 0·82 below zero. The median of the generating curve is found by measuring 2·21 to the right of O. To find the centre of gravity of the generating curve, it is proper to measure in the direction of the longer limb, that is to the left (j being negative), the distance $\frac{1}{3}\mathrm{j}c$, where

$$\mathrm{j}=q\div\sqrt{\mathrm{a}}=0{\cdot}07,\ \text{and}\ c=0{\cdot}986.$$

Thus the centre of gravity is at the distance $2{\cdot}21-0{\cdot}02$, that is 2·19 from O, or 1·37 from zero.

Then to find the proportion of the given observations to the left of any point, say at the distance X from zero, we have the following formula:—

$$\tfrac{1}{2}[1-\mathrm{F}(\xi)]-\frac{1}{\sqrt{\pi}}\tfrac{2}{3}\mathrm{j}e^{-\xi^2}[\tfrac{1}{2}-\xi^2];$$

where F is the well-known integral of the error function, j in the case before us $=-0{\cdot}07$, and ξ is related as follows to X. The distance of the latter point from the origin O is $\mathrm{X}+0{\cdot}82$. Therefore the corresponding point on the generating system is $\sqrt{\mathrm{X}+0{\cdot}82}$. The distance of this from the centre of gravity of the generating (asymmetric) probability-curve is $2{\cdot}19-\sqrt{\mathrm{X}+0{\cdot}82}$. This quantity divided by the modulus c, in the case before us 0·986, gives the required value of ξ.

For instance, let X be $+0{\cdot}5$ (from zero). Then ξ is found to be 1·056. Whence for the percentage of observations below 0·5 we have by calculation 6·8; whereas the given percentage is 6·4 [66].

Again, let $\mathrm{X}=1{\cdot}5$ (from zero). Then $\xi=0{\cdot}676$; and for the percentage of observations below 1·5 we have 17; whereas the true percentage is 18.

In the last verification we have enjoyed the convenience of not having to evaluate the second term of the expression for the proportion of area outside X; since that term is evidently nearly zero when ξ^2 is nearly $\frac{1}{2}$. To enjoy the same convenience in dealing with the right hand portion of the given curve, let us take ξ measured to the right of the centre of gravity of the generating curve $=\frac{1}{\sqrt{2}}$. (*Journal of the Royal Statistical Society*, vol. lxii,

p. 549.) The corresponding value of X measured from zero is $(2{\cdot}19 + 0{\cdot}707 \times 0{\cdot}986)^2 - 0{\cdot}82 = 7{\cdot}5$. According to the calculation there ought to be 15 per cent. of the observations above that point. In fact there is 14·2 per cent. [66.]

Lastly, let ξ again measured to the right $= 2$. Here again we may neglect the second term of the expression to be calculated; and accordingly find at once for the percentage above the corresponding point 0·47. That corresponding point is $(2{\cdot}19 + 2 \times 0{\cdot}986)^2 - 0{\cdot}82$; that is 16·5. And in fact above that point the observed percentage is 43.

It will be recollected that these verifications are obtained with rather rough solutions of the fundamental equations.

The direct treatment of that system is the less to be advised, in that the solution might prove to be impossible within the conditions prescribed, viz., "a" positive and not very small, say greater than 2, and $q \div \sqrt{\mathrm{a}}$, not greater in absolute magnitude than 0·15. The solution seems to be impossible in the case of the barometric pressures just now mentioned, to judge from the writer's unsuccessful tentatives.

Perhaps the coefficient j is so large, the generating curve so different from the received error-function, that the formulæ of integration on which the equations are based become sensibly inaccurate. Or perhaps j is very small, and the generating curve differs from the ordinary probability-curve, the first approximation to the normal law, not so much in respect of the *second* as to the *third* term of approximation. In this case we have to suppose that the equation of the generating curve referred to its centre of gravity as origin is of the form

$$\Delta xy = \Delta\xi \frac{1}{\sqrt{\pi}} e^{-\xi^2} \left\{ 1 + \mathrm{i} \left[\frac{1}{2} - 2\xi^2 + \frac{2}{3}\xi^4 \right] \right\};$$

where i is the excess of the mean *fourth* power above what it ought to be if the first approximation were perfectly accurate; x is the distance from the centre of gravity (of the generating curve); $\xi = x \div c$, where c is the modulus (of the same curve). Then a system of equations may be obtained involving i and c and the other *quæsita* required to determine the position of the generating curve in terms of the four *data*, the centre of gravity of the given group, and the mean power of deviation therefrom up to the fourth inclusive. But query if it is worth the trouble of constructing and solving such a system of equations, without a stronger *a priori* presumption that the method is proper to the case.

Some minor *addenda* and *corrigenda* are subjoined in conclusion:—

At p. 672, *Journal of the Royal Statistical Society*, vol. lxi, paragraph 5, *refer to* "p. 550, *Journal of the Royal Statistical Society*, vol. lxii."

At p. 674, *Journal of the Royal Statistical Society*, vol. lxi, last paragraph, *for* "unsymmetrical" *read* "very asymmetrical."

At p. 690, ibid., paragraph 2, *refer to* "Note 4 of Appendix."

At p. 695, ibid., line 4, *after* "to" *read* "be."

Ibid., line 12, *after* "$3a_2g$," *read* "$+ \mu_3$."

Ibid., line 21, *for* "μ^2" *read* "μ_2."

At p. 699, ibid., on the second line from the end of Note 7 of Appendix, "comma" *after* "2·23."

At p. 130, *Journal of the Royal Statistical Society*, vol. lxii, *refer to* Appendix, Note 10.

At p. 373 ibid., line 1, *before* "The relation" *read* "III."

At pp. 378 and 379, ibid., Note 13, *refer to* "p. 534, ibid."

At p. 550, *Journal of the Royal Statistical Society*, vol. lxii, paragraph 1, *for* "j" *read* "$j \div c^{\frac{2}{3}}$." Ibid., line 8, *for* "$\frac{3}{2\sqrt{\pi}}$" *read* "$\frac{3\sqrt{\pi}}{2}$."

At p. 551, ibid., paragraph 4, *for* "bound" *read* "bounds."

Ibid., note 37, *after* "definition" *dele* comma.

F. Y. E.

II.—*Trade Union Expenditure on Unemployed Benefits since* 1860.

By George H. Wood.

During the course of the discussion on the paper read to the Society by the present writer on 19th December last, Mr. George Howell suggested that it would be advisable to test the average percentage there given of Trade Union members annually unemployed, by tracing the variations in average expenditure of Trade Unions on unemployed benefit. The question to be decided is, "whether the years denoted as being depressed or the opposite by the percentage unemployed, as given in my former paper, were actually times of depressed or expanding trade?" In other words, "were the data on which the average percentage unemployed results were based, of sufficient value and importance to make them a reliable and accurate record of the variations in the state of employment from 1860 to 1890?"

Only a few Trade Union records go back so far as 1860, and a few more commence in 1863-69, but a large number date from 1876-77. We are thus, at the outset, confined to at most twenty-three unions whose records are useful for the present purpose, though it would be interesting to test the following results for 1876 onwards by the light of the records which commence in that year. The present paper is confined to the examination of continuous records commencing at or before 1869. The whole of the figures are taken from the Reports on Trade Unions. The following table shows these variations for twenty-two unions:—

TABLE I.—*Showing the Average Expenditure per Head of certain Trade Unions on Unemployed or Travelling Benefit*, 1860-96.

	1860.		1861.		1862.		1863.		1864.		1865.		1866.		1867.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Amalgamated Carpenters and Joiners	–	9¾	7	7	5	8¼	5	–¾	1	3½	1	2¾	3	4	13	1½
Co-operative Smiths	2	6½	1	9	7	1	3	10¾	2	1½	2	11	17	4½	22	–¾
Amalgamated Engineers	7	5¾	11	11	32	3¼	35	1¼	11	4¾	9	1	33	9¾	34	11½
Steam Engine Makers	6	2½	6	2¾	17	4	25	7¾	10	–½	5	–½	5	1	9	7¾
Friendly Ironfounders	9	10¾	29	3½	46	10½	33	1¾	18	11¾	15	6	26	9	65	1
London Bookbinders	14	9¾	24	10½	21	10¼	12	10¾	6	–	7	3¾	7	–¼	15	3¾
" Society Compositors	1	9¾	8	8¼	7	1¾	3	7¼	8	7¾	12	–¾	11	2	15	7¾
Warehousemen's Philanthropic	9	3¼	15	8	6	11	2	3	13	2¾	4	1	9	5	9	8
London Zinc Workers	1	10¼	8	6½	3	–½	3	–¼	1	9½	–	9	4	4	5	7
Associated Blacksmiths	1	2¼	2	1½	4	11	1	10½	–	5½	–	9½	26	2½	18	11
" Ironmoulders	25	2½	51	5	53	2	36	4¾	16	1¾	31	3¾	32	–½	94	–¼
Average of above unions....	7	4½	15	10	18	9	13	10¾	8	2¼	5	5½	16	–½	27	7½
United Bricklayers (tramp relief)	—		—		—		—		—		—		—		5	6
General Carpenters and Joiners	—		—		—		—		—		2	9½	1	–½	6	7
United Plumbers (unemployed travelling)	—		—		—		—		—		—		—		—	
Alliance Cabinet Makers	—		—		—		—		—		—		—		—	
London Upholsterers	—		—		—		—		—		—		—		6	7
Amalgamated Tailors (travelling)	—		—		—		—		—		—		—		—	
Coach Makers	—		—		—		—		—		—		—		19	4¾
Boiler "	—		—		—		—		—		—		—		34	3¾
Glass Bottle Makers, Yorks.	—		—		—		—		—		—		—		27	·7
Typographical Association....	—		—		—		12	–	7	1¾	5	9	6	1½	9	7½
Bradford Overlookers...........	—		—		—		—		—		—		—		—	
Average of above eleven unions	—		—		—		—		—		—		—		—	
Average of all unions in table	7	4½	15	10	18	9	13	8¾	8	–	5	3	14	1½	22	11¾
Percentage unemployed in fifteen unions*................	1·61		4·28		7·81		5·74		2·56		2·01		3·10		7·34	
Board of Trade percentage unemployed (all trades)*	—		—		—		—		—		—		—		—	

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* *Journal of the Royal Statistical Society*, December, 1899, p. 645 ff.

TABLE I *Contd.—Average Expenditure per Head on Unemployed or Travelling Benefit.*

	1868.		1869.		1870.		1871.		1872.		1873.		1874.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Amalgamated Carpenters and Joiners	13	5½	19	1½	19	9	13	2¼	6	2	4	10	4	–
Co-operative Smiths	18	1¼	11	8¼	7	1	27	8¼	3	1	3	6¼	3	5
Amalgamated Engineers	39	9¾	35	9¼	18	10¼	6	6¼	7	5¾	7	4	9	9¼
Steam Engine Makers	25	1½	25	10½	20	10¼	6	6¼	3	5½	4	6½	5	–
Friendly Ironfounders	64	1½	55	4½	30	1¼	10	10½	5	5¼	13	4	17	11½
London Bookbinders	21	2½	23	9¼	30	9¾	11	8½	9	–¾	17	4¾	15	3¼
,, Society Compositors	14	4½	16	9½	23	11	11	8½	7	11½	6	6	7	1
Warehousemen's Philanthropic	5	6¼	8	8	18	–	3	9	8	7¾	8	10½	11	6
London Zinc Workers	1	6½	8	11½	3	6¼	2	9¼	–	9	2	6¾	–	6¾
Associated Blacksmiths	8	6¼	3	1½	2	9¼	2	2	3	1½	1	2¾	7	4¼
,, Ironmoulders	43	1	19	–¾	11	5½	5	1	10	4¼	14	1	25	6½
Average of above unions	23	1	20	3½	17	–	9	3¾	5	11½	7	7¾	9	9¼
United Bricklayers (tramp relief)	7	3½	2	8½	1	9	1	1	1	–¾	1	3¼	1	1¼
General Carpenters and Joiners	7	1¾	9	6½	14	1½	11	5¼	3	–½	3	1½	2	9¼
United Plumbers (unemployed travelling)	–	4¼	–	4½	–	8¼	–	5½	–	3½	–	5¼	–	3¼
Alliance Cabinet Makers	1	1½	4	9¾	6	9¼	1	11½	–	3¾	–	2¾	–	11
London Upholsterers	22	7	17	–	9	8	4	9	9	2½	5	10½	9	1¼
Amalgamated Tailors (travelling)	—		1	–½	1	3¾	–	11¼	–	11½	1	–½	1	11¼
Coach Makers	20	8¼	18	5¾	19	3½	14	10½	10	1½	8	4	10	1
Boiler ,,	6	11½	5	8¼	5	4¾	3	4	1	3¼	2	–¼	2	4½
Glass Bottle Makers, Yorks.	32	9¾	5	5¾	5	1¼	7	1¼	–	4¾	–	1¾	–	7
Typographical Association	7	9½	9	1	7	2¼	5	1	4	9½	4	3¾	6	4¾
Bradford Overlookers	4	–¼	3	8	5	6¼	2	8½	2	5	12	2½	9	–½
Average of above eleven unions	—		7	1	6	11¾	4	10⅓	3	1	3	6½	4	–½
Average of all unions in table	17	4¼	13	8¼	12	–	7	1	4	6¼	5	7	6	10¾
Percentage unemployed in fifteen unions*	8·51		7·42		4·32		1·81		1·06		1·26		1·76	
Board of Trade percentage unemployed (all trades)*	—		—		—		—		—		—		—	

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* *Journal of the Royal Statistical Society*, December, 1899, p. 645 ff.

TABLE I *Contd.—Average Expenditure per Head on Unemployed or Travelling Benefit.*

	1875.		1876.		1877.		1878.		1879.		1880.		1881.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Amalgamated Carpenters and Joiners	3	6½	3	8½	5	–	12	8	32	9	24	8	20	5¼
Co-operative Smiths	9	7½	23	9½	11	1½	20	8	47	8¾	11	8½	5	2½
Amalgamated Engineers	14	4	20	2¼	24	2	33	3¼	68	–¼	27	9½	17	4¼
Steam Engine Makers	7	10¼	11	7¾	15	–¾	26	2¾	41	11½	17	3	11	11
Friendly Ironfounders	18	1¾	28	–¼	40	2¼	61	–	93	8¼	41	10½	32	8¼
London Bookbinders	5	6	13	8¾	32	10½	31	6½	29	2½	19	4	8	2¾
,, Society Compositors	4	5	10	4½	11	9¾	14	3½	21	9¾	19	10	19	–
Warehousemen's Philanthropic	10	10¼	47	2½	59	7¾	69	3½	59	4	30	11	23	1½
London Zinc Workers	–	10¼	1	10¾	–	9½	–	2¼	2	11½	3	11¼	3	7
Associated Blacksmiths	6	–	5	10¾	17	5¾	16	7	33	3½	7	–	3	3
,, Ironmoulders	32	9½	35	9½	35	8	57	6½	68	11¾	32	5½	25	4¾
Average of above unions	10	6½	18	5	23	–¾	31	5	45	5	21	6¼	15	5¾
United Bricklayers (tramp relief)	–	9½	1	2¼	1	11	4	11¼	7	2¼	3	3½	1	11¾
General Carpenters and Joiners	2	3½	2	–	3	11½	12	9	28	–¼	26	5¼	18	4½
United Plumbers (unemployed travelling)	–	1½	–	2	–	3½	–	9	1	7	1	3	1	2¼
Alliance Cabinet Makers	1	9	4	6¾	5	6¾	10	10½	26	2¾	17	2¾	12	–¾
London Upholsterers	8	9½	9	11	15	2	16	1	23	7½	25	9	14	1¾
Amalgamated Tailors (travelling)	2	1¾	2	2	2	9¼	2	6	3	–½	2	5¾	2	1¾
Coach Makers	9	6½	13	6¼	19	5¼	23	–¾	44	8½	13	11½	13	2¼
Boiler ,,	14	11	20	6	15	–¾	22	11½	37	8½	22	2¼	2	4½
Glass Bottle Makers, Yorks.	–	6¾	1	4½	7	8½	53	7	61	10¾	41	5½	27	10¾
Typographical Association	9	3	11	–	9	2	12	1	15	3¼	12	1¼	10	9¼
Bradford Overlookers	5	11½	6	5½	8	5¼	14	11	15	7	6	2¼	14	10
Average of above eleven unions	5	1¼	6	7½	8	1½	15	5	24	1	15	8	10	9¾
Average of all unions in table	7	9¾	12	6¼	15	7	23	5	34	9	18	7	13	1¾
Percentage unemployed in fifteen unions*	2·49		3·56		4·44		6·31		12·50		5·93		3·45	
Board of Trade percentage unemployed (all trades)*	—		—		—		—		—		—		—	

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* *Journal of the Royal Statistical Society*, December, 1899, p. 645 ff.

TABLE I *Contd.—Average Expenditure per Head on Unemployed or Travelling Benefit.*

	1882.		1883.		1884.		1885.		1886.		1887.		1888.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Amalgamated Carpenters and Joiners	14	3¼	14	–¾	18	9¼	27	–¾	32	7½	25	8¾	24	–¼
Co-operative Smiths	3	–	5	4½	68	11	—		—		36	5¼	14	1
Amalgamated Engineers	9	6½	14	–¾	24	7½	30	5¼	32	5¼	31	–¼	20	4½
Steam Engine Makers	6	8¾	8	3	12	9½	19	11	22	11	23	6¾	11	9½
Friendly Ironfounders	18	3½	19	2½	30	4½	43	7	54	7	37	2½	20	8½
London Bookbinders	15	1¾	17	5	14	8	21	10¾	27	4¾	17	1¼	13	4½
,, Society Compositors	17	1	14	2¾	13	1½	16	8¼	16	6¼	13	8½	14	11¾
Warehousemen's Philanthropic	34	5¼	30	2½	27	10¾	28	5½	21	4½	17	4½	23	4
London Zinc Workers	9	7½	3	4½	5	7¾	19	6	19	8½	36	7½	44	4
Associated Blacksmiths	2	–½	4	–¾	28	2½	35	–¼	28	–	24	5½	9	–¾
,, Ironmoulders	35	5¼	15	7¾	51	8¾	61	11	51	7¾	32	7¾	15	4½
Average of above unions	15	–¾	13	5¼	26	11¾	24	5½	30	1½	26	10¾	19	2¾
United Bricklayers (tramp relief)	2	6	–	10½	–	10¼	–	10¾	–	10¼	–	4½	–	3½
General Carpenters and Joiners	12	11½	11	5½	10	5	15	4½	15	1¼	11	1½	15	1¾
United Plumbers (unemployed travelling)	–	10½	–	10	–	9¾	2	3	3	3½	2	1	1	11¼
Alliance Cabinet Makers	11	1½	15	6¼	24	6¼	29	11½	36	–½	25	1¾	15	8¼
London Upholsterers	15	9	39	6¾	32	3	43	11½	22	7	14	3	15	10½
Amalgamated Tailors (travelling)	1	11¾	2	–¾	2	4	1	11¾	1	10¼	1	9½	1	7½
Coach Makers	11	1¾	11	2¼	13	–¼	18	4	22	11½	17	1½	19	3¼
Boiler ,,	–	9	2	9¼	39	11¼	30	6¼	27	11	17	8	5	9
Glass Bottle Makers, Yorks.	12	1½	17	2	38	7	32	4½	77	4¾	20	4¼	24	1½
Typographical Association	6	7	6	5½	6	3¼	7	2¾	7	–¾	7	1	8	6
Bradford Overlookers	8	5	6	1	3	11½	7	6½	6	5½	8	10½	4	7½
Average of above eleven unions	7	8	10	4¼	15	8¾	17	3¾	20	1¾	11	5¼	10	3
Average of all unions in table	11	4¼	11	10¾	21	4¼	20	10½	25	1½	19	2	14	8¾
Percentage unemployed in fifteen unions*	1·92		2·23		7·40		8·98		9·55		7·42		4·55	
Board of Trade percentage unemployed (all trades)*	—		—		—		—		—		8·16		4·83	

* *Journal of the Royal Statistical Society*, December, 1899, p. 645 ff.

TABLE I *Contd.—Average Expenditure per Head on Unemployed or Travelling Benefit.*

	1889.		1890.		1891.		1892.		1893.		1894.		1895.		1896.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Amalgamated Carpenters and Joiners	14	2¼	9	3½	10	2	13	1¾	14	9½	19	2¾	17	6	6	9
Co-operative Smiths	3	5¼	—		14	7½	—		—		—		—		—	
Amalgamated Engineers	9	9½	9	10½	15	9¾	32	10	36	5½	36	9¾	27	6¾	15	4½
Steam Engine Makers	5	–¾	4	7½	7	8½	17	9½	25	1	25	1¼	17	5	7	8¾
Friendly Ironfounders	7	8¼	11	1	19	10	38	11¾	43	2	49	2½	33	11¼	12	9½
London Bookbinders	8	5¼	7	2½	7	11¾	42	9½	26	3½	33	9	33	11¼	21	6¼
,, Society Compositors	12	7½	12	7½	23	9¾	24	11½	24	9	34	7	24	3	20	11½
Warehousemen's Philanthropic	19	2	11	9½	17	10¼	—		—		—		—		—	
London Zinc Workers	12	5½	7	9½	5	5¾	—		—		—		—		—	
Associated Blacksmiths	5	3	4	3¼	5	6½	16	3½	25	3½	31	2¼	17	7¼	10	5
,, Ironmoulders	7	1¾	12	–½	24	10¾	36	10½	39	6	34	10½	33	4½	14	7¾
Average of above unions	9	7½	9	–¾	13	11½	—		—		—		—		—	
United Bricklayers (tramp relief)	–	3¼	–	2¾	–	1½	–	4¾	–	5½	–	3¾	–	1¾	–	2½
General Carpenters and Joiners	7	8½	3	9¾	4	2½	3	11	3	2	4	4¼	6	11	3	1
United Plumbers (unemployed travelling)	1	1¾	1	1	1	2¼	3	6¼	1	10½	2	3¾	1	3¾	1	2¾
Alliance Cabinet Makers	6	–	3	2¾	7	9	11	7	18	4½	17	2¼	12	9¼	–	9
London Upholsterers	15	10¾	6	3¾	12	1	—		—		—		—		—	
Amalgamated Tailors (travelling)	1	–¾	–	11½	1	–¾	–	8½	–	10½	–	9¼	–	9¼	–	8¼
Coach Makers	14	3	9	6¼	9	3½	13	5	13	11¼	15	5½	13	11¾	18	2¾
Boiler ,,	2	3¾	6	10¾	9	9½	18	6¾	25	3¾	24	8¾	20	10½	18	4¾
Glass Bottle Makers, Yorks.	27	4¾	13	3½	8	2½	28	–¼	40	6½	64	11¼	58	4½	25	9¾
Typographical Association	6	2½	6	–¼	4	7½	4	9¼	8	6¼	11	7¾	13	7½	13	10½
Bradford Overlookers	5	9½	2	11	6	3	—		—		—		—		—	
Average of above eleven unions	8	–	4	11½	5	10½	—		—		—		—		—	
Average of all unions in table	8	3¾	7	–	9	11	18	4¾	19	7½	22	7	18	7½	11	4½
Percentage unemployed in fifteen unions*	2·05		1·90		3·04		—		—		—		—		—	
Board of Trade percentage unemployed (all trades)*	2·10		2·12		3·5		6·25		7·5		6·91		6·66		3·41	

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* *Journal of the Royal Statistical Society*, December, 1899, p. 645 ff.

Any such statistics as these are only comparable over short periods, because Trade Unions have made repeated changes in the amounts per week payable to out-of-work members, and these changes cannot be traced. For example, the London Society of Compositors paid as follows:—

	s.				
1848–66........	8	per week	for 13	weeks only.	
’66–79........	10	”		”	
’79 to date	12	”	16	”	(9*l.* 12*s.* per year).

It is not certain that all Societies have increased their unemployed benefits, but the fact that changes have been made prevents comparison over long periods, and we are unable to tell from these figures whether the numbers requiring relief have increased or not. It is certain, however, that the burden of the unemployed on those remaining in employment has increased. What the averages at the bottom of this table do, is to enable us to locate the depressed and expanding years. It will be comparatively safe to compare a given year with that which immediately precedes or succeeds it, as any change in the scale of payments in an individual Union is practically lost in the average of twenty-two Unions.

The two bottom complete lines of the table are those which it is desirable to compare, and the signs of depression or good trade may be tabulated thus:—

Period.	Lowest Expenditure and Percentage.			Highest Expenditure and Percentage.		
1860–65	1865	Expenditure	5*s.* 3*d.*	1862	Expenditure	18*s.* 9*d.*
		Percentage	2·91		Percentage	7·81
’66–72	’72	Expenditure	4*s.* 6¼*d.*	’67	Expenditure	22*s.* 11¾*d.*
		Percentage	1·06	’68	Percentage	8·51
’73–81	’73	Expenditure	5*s.* 7*d.*	’79	Expenditure	34*s.* 9*d.*
		Percentage	1·26		Percentage	12·50
’82 90	’90	Expenditure	7*s.* –*d.*	’86	Expenditure	25*s.* 1½*d.*
		Percentage	1·90		Percentage	1·95

It will be seen that only on one occasion do the maxima and minima of *any* period (no matter of what length) fail to come for both percentage of members unemployed and for average expenditure in the same year. It should be noticed that the variations in the rates of benefit paid by various Unions are great, and these variations absolutely prevent any testing of these averages by systems of weights. They have no common measure. The following table shows the rates paid by some Unions in 1890:—

Table II.—*Rates of Unemployed Benefit Paid by Certain Trade Unions.*

Union.	Rates of Pay.	Maximum Sum which a Member may receive in 1 Year.		
		£	*s.*	*d.*
United Brushmakers	10*s.* for 18 weeks; 8*s.* for 18 weeks; 7*s.* for 18 weeks (and ½*d.* per mile afterwards when travelling)	21	16	–
Amalgamated Carpenters and Joiners	— —	9	12	–
Associated Carpenters and Joiners	8*s.* for 16 weeks	6	8	–
Operative Plumbers	10*s.* 6*d.* per week when travelling in search of work	—		
Progressive Cabinet Makers	10*s.* for 8 weeks; twice in a year	8	–	–
London Amalgamated Upholsterers	2*s.* 6*d.* per day for 14 weeks	10	10	–
Cigarmakers	9*s.* for 13 weeks; 6*s.* for 13 weeks	9	15	–
Amalgamated Tailors	Travellers, 1*s.* 4*d.* at each branch they may visit, but only one such visit to be paid in 6 weeks	—		
Philanthropic Coopers	12*s.* per week	27	6	–*
Amalgamated Society of Engineers	— —	19	12	–
United Machine Workers	10*s.* for 8 weeks; 5*s.* for 8 weeks; 2*s.* 6*d.* for 8 weeks	7	–	–
East London Hammermen	10*s.* for 13 weeks	6	10	–
London Society of Compositors	12*s.* for 16 weeks	9	12	–
Oldham Powerloom Overlookers	10*s.* for 13 weeks; 7*s.* 6*d.* for 13 weeks; and 5*s.* for 26 weeks	17	2	6

* This might not be continuous, but the Returns do not make it clear.

These rates are given as samples taken at random and could be added to largely. Where such variations exist, it would be impossible to find an average for the whole, and the averages given in Table I must only be considered as the unweighted averages of the statistics in the columns to which they belong. No reliance can be placed upon them except for the immediate purpose for which they were calculated.

An interesting statistical problem arises when dealing with such a mass of incomparable data. Would any more reliable results accrue if instead of averaging the figures themselves, the percentage variations were measured in the form of an index number? The initial difficulty in such a task is the selection of the best period as base. Where a sequence of statistics varies in its quantities from 39*s.* 11¼*d.* to 9*d.* (as do those of the Boilermakers), or from 77*s.* 4¾*d.* to 7*d.* (as the Yorkshire Glass Bottle Makers), it is obvious that finding a base is an important matter. To avoid allowing accidental movements in individual figures to have undue influence, the average of a period forms the best base, and in the following calculations I have adopted the average of the years 1882-91.

TABLE III.—*Showing Variations in the Expenditure by certain Trade Unions on Unemployed and Travelling Benefit, reduced to Percentages of* 1882-91 = 100.

Union.	Amount Taken as Base.		1860.	1861.	1862.	1863.	1864.	1865	1866.	1867.	1868.	1869.
	s.	*d.*										
Amal. Carps. and Joiners	19	1¼	4	40	30	26	6	6	17	68	70	100
Co-operative Smiths	20	10	12	8	33	19	10	14	83	105	87	56
Amal. Soc. of Engineers..	19	9	37	89	162	176	56	45	170	175	196	180
Steam Engine Makers	12	4	50	50	142	208	81	41	41	78	202	208
Friendly Ironfounders....	26	3	38	112	179	127	72	59	102	249	245	210
London Bookbinders........	15	−¾	98	165	145	86	40	48	47	101	141	157
,, Soc. of Comps.....	15	7¼	12	55	46	23	55	77	71	100	92	107
Warehousemen's Phil.	23	2¼	39	68	30	10	57	20	40	41	24	16
London Zinc Workers	16	7½	12	55	20	20	12	5	28	37	11	56
Associated Blacksmiths...	14	7	8	15	34	13	3	5	179	130	58	21
,, Ironmoulders	30	10	82	166	173	116	52	101	103	305	140	61
United Bricklayers	–	8¾	—	—	—	—	—	—	—	756	1,000	373
Gen. Carps. and Joiners....	10	9¼	—	—	—	—	—	26	10	61	65	90
United Plumbers	1	6½	—	—	—	—	—	—	—	—	23	24
Alliance Cabinetmakers...	17	6	—	—	—	—	—	—	—	—	6	27
London Upholsterers..... ..	11	10¼	—	—	—	—	—	—	—	55	190	143
Amalgamated Tailors	1	7¾	—	—	—	—	—	—	—	—	—	64
Coachmakers	14	7¼	—	—	—	—	—	—	—	132	143	125
Boilermakers	14	5¼	—	—	—	—	—	—	—	240	48	40
Glass Bottle Makers	27	1¼	—	—	—	—	—	—	—	102	117	20
Typographical Assoc.	6	7¼	—	—	—	182	108	87	93	147	118	137
Bradford Overlookers	6	1	—	—	—	—	—	—	—	—	66	60
Operative Stonemasons*	2	5½	—	—	—	—	—	—	75	123	146	194
Average	—		35	75	90	84	46	41	76	158	145	107

	s.	*d.*	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Amal. Carps. and Joiners	19	1¼	103	69	32	25	21	18	19	26	66	174
Co-operative Smiths	20	10	33	132	15	17	16	46	114	53	100	228
Amal. Soc. of Engineers..	19	9	95	33	37	36	49	72	102	122	168	343
Steam Engine Makers	12	4	163	52	28	36	40	64	95	122	212	340
Friendly Ironfounders	26	3	115	42	21	5·1	68	69	107	154	234	355
London Bookbinders........	15	−¾	204	78	60	115	101	36	91	218	210	192
„ Soc. of Comps.....	15	7¼	152	75	51	41	45	28	66	76	91	140
Warehousemen's Phil.	23	2¼	77	16	37	38	49	46	204	257	299	256
London Zinc Workers	16	7½	23	19	5	18	3	5	13	5	1	19
Associated Blacksmiths ..	14	7	19	15	21	8	50	41	40	120	114	228
,, Ironmoulders	30	10	37	16	33	45	83	106	116	116	186	224
United Bricklayers	–	8¾	240	148	146	173	150	108	165	399	676	985
Gen. Carps. and Joiners....	10	9¼	131	106	28	29	26	21	19	37	117	260
United Plumbers	1	6½	44	30	19	29	18	8	11	19	49	102
Alliance Cabinetmakers...	17	6	39	11	1	1	5	10	26	32	62	151
London Upholsterers........	11	10¼	81	40	77	49	75	74	80	126	135	199
Amalgamated Tailors	1	7¾	80	57	59	64	119	130	131	169	152	185
Coachmakers	14	7¼	132	101	69	57	69	65	93	133	161	306
Boilermakers	14	5¼	39	22	8	14	15	104	143	104	160	268
Glass Bottle Makers	27	1¼	19	27	1	1	2	2	5	28	195	228
Typographical Assoc.	6	7¼	109	77	73	66	97	139	166	138	184	231
Bradford Overlookers	6	1	90	44	40	200	148	98	106	135	246	256
Operative Stonemasons*	2	5½	209	110	102	114	84	101	70	156	—	—
Average	—		97	57	42	53	58	60	86	119	173	257

* Does not appear in previous tables.

TABLE III *Contd.—Showing Variations in the Expenditure by certain Trade Unions.*

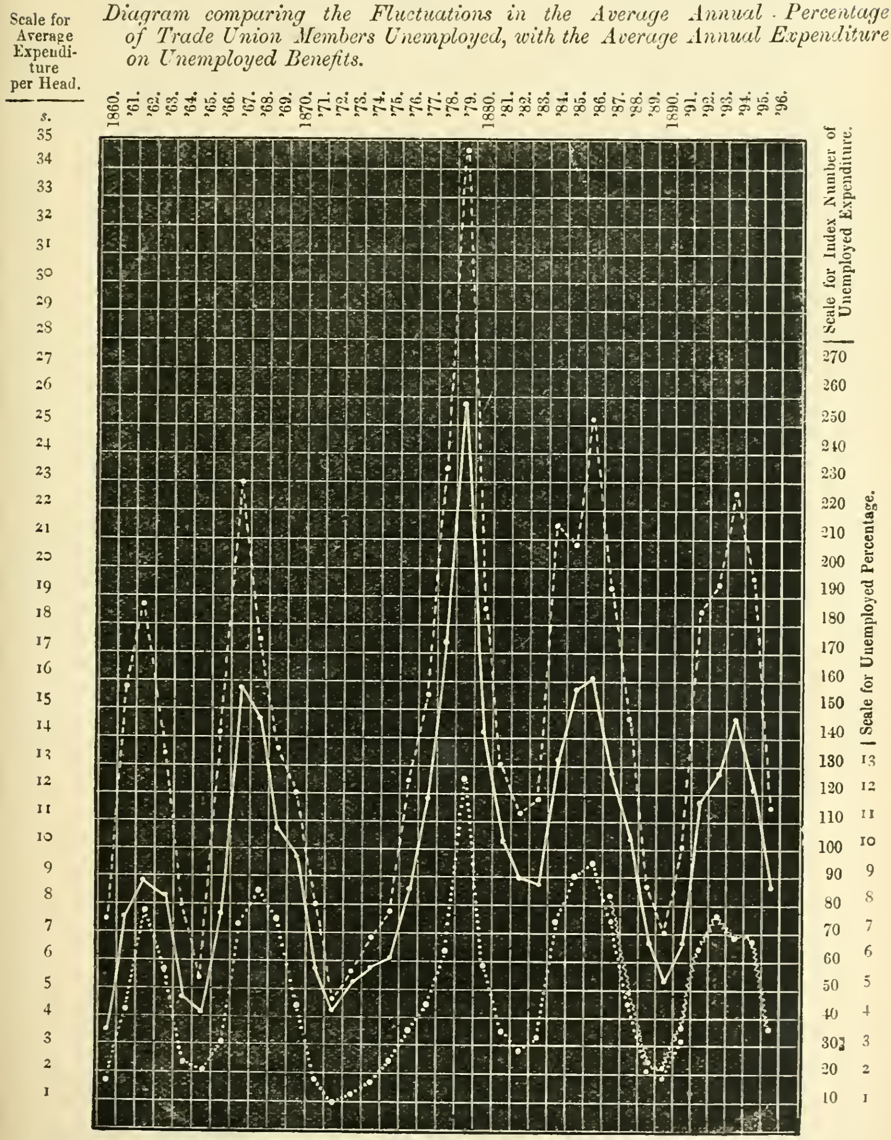
Union.	Amount Taken as Base.		1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
	s.	*d.*									
Amal. Carps. and Joiners	19	1¼	130	107	75	74	99	141	172	135	127
Co-operative Smiths	20	10	55	25	14	26	330	—	—	175	67
Amal. Soc. of Engineers	19	9	140	87	48	70	124	154	163	156	102
Steam Engine Makers	12	4	142	96	54	67	103	162	185	191	96
Friendly Ironfounders	26	3	156	125	69	73	116	166	202	143	79
London Bookbinders	15	–¾	128	54	100	115	97	145	181	113	89
,, Soc. of Comps.	15	7¼	127	121	109	91	85	107	106	88	95
Warehousemen's Phil.	23	2¼	133	100	149	131	120	123	92	75	100
London Zinc Workers	16	7½	24	23	63	36	37	128	129	232	272
Associated Blacksmiths	14	7	48	22	14	28	193	240	191	164	62
,, Ironmoulders	30	10	105	82	115	50	167	200	167	106	50
United Bricklayers	–	8¾	451	271	342	120	118	122	118	51	40
Gen. Carps. and Joiners	10	9¼	245	170	120	106	97	148	140	103	140
United Plumbers	1	6½	81	77	57	54	52	145	213	135	126
Alliance Cabinetmakers	17	6	98	69	63	89	140	173	206	144	91
London Upholsterers	11	10¼	217	118	132	333	271	367	190	120	135
Amalgamated Tailors	1	7¾	151	131	122	126	142	122	113	109	98
Coachmakers	14	7¼	95	90	75	75	89	124	157	115	132
Boilermakers	14	5¼	162	15	6	16	275	212	194	122	40
Glass Bottle Makers	27	1¼	153	102	45	63	143	120	286	75	89
Typographical Assoc.	6	7¼	184	163	100	98	96	110	107	107	128
Bradford Overlookers	6	1	101	245	138	100	65	124	106	145	76
Operative Stonemasons*	2	5½	—	—	63	65	84	97	117	112	147
Average	—		142	104	90	87	132	156	161	127	103

			1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.
	s.	*d.*								
Amal. Carps. and Joiners	19	1¼	74	49	56	68	78	101	92	71
Co-operative Smiths	20	10	16	—	70	—	—	—	—	—
Amal. Soc. of Engineers	19	9	48	49	79	165	184	186	138	77
Steam Engine Makers	12	4	41	38	62	145	203	203	144	62
Friendly Ironfounders	26	3	30	42	76	149	165	188	130	49
London Bookbinders	15	–¾	56	48	53	284	174	224	225	144
,, Soc. of Comps.	15	7¼	81	81	152	160	159	220	155	135
Warehousemen's Phil.	23	2¼	82	51	77	—	—	—	—	—
London Zinc Workers	16	7½	82	51	36	—	—	—	—	—
Associated Blacksmiths	14	7	36	29	38	112	173	214	120	71
,, Ironfounders	30	10	23	39	81	119	128	113	169	45
United Bricklayers	–	8¾	37	31	17	53	63	42	19	29
Gen. Carps. and Joiners	10	9¼	71	35	39	36	29	40	64	29
United Plumbers	1	6½	74	70	77	229	122	150	85	80
Alliance Cabinetmakers	17	6	34	19	44	65	105	98	73	27
London Upholsterers	11	10¼	135	53	102	—	—	—	—	—
Amalgamated Tailors	1	7¾	65	59	65	43	53	47	47	41
Coachmakers	14	7¼	97	65	64	92	95	106	95	125
Boilermakers	14	5¼	14	48	68	128	175	172	145	126
Glass Bottle Makers	27	1¼	101	49	30	103	150	240	215	95
Typographical Assoc.	6	7¼	94	92	71	73	129	176	207	210
Bradford Overlookers	6	1	95	48	102	—	—	—	—	—
Operative Stonemasons*	2	5½	146	116	62	73	84	117	109	98
Average	—		67	53	66	116	126	146	121	84

* Does not appear in previous tables.

This work is chiefly valuable for showing how consistent general results may be obtained in various ways from sets of data which run in fairly similar directions. The similarity of the three curves shown in the diagram, each curve representing some-

Diagram comparing the Fluctuations in the Average Annual Percentage of Trade Union Members Unemployed, with the Average Annual Expenditure on Unemployed Benefits.



- - - - - - Expenditure of all trade unions in Table I per head per annum.
——— Index Numbers of expenditure of all trade unions in Table I per head per annum.
.... Percentage of trade union members unemployed, Table I.
〰〰 „ „ Board of Trade Averages.

thing different from the other, establishes the conclusions that although individual trades may suffer in different degrees, and though some may suffer most at the commencement and some towards the end of a trade depression, they generally move sympathetically with each other, and we may locate the years of depression and expansion since 1860 with a definiteness which well repays this rather laborious study. The conditions of trade and the labour market which were indicated in the diagram published in the *Journal*, December, 1899, are here shown pronouncedly, and we may safely affirm that the years 1867-68, 1877-80, 1884-87, 1892-95, were depressed, while the years 1860, 1865-66, 1871-75, 1881-83, 1889-90, 1896 were years of expansion. One other point may be deduced by comparison of the lower curve with the two upper curves on the present diagram. When the labour market is brisk, the periods of unemployment for individuals changing their place of occupation are short, *e.g.*, the time they claim unemployed benefit is short, as is seen in the small divergence between the positions of the lowest points in each curve. Conversely, in times of depression, not only are a larger percentage of workmen unemployed at a given time, *i.e.*, at the end of each month when the return is made up, but the time spent in passing from one job to another is greatly increased: a phase which the monthly return of the percentage unemployed *may*, and probably does, fail to show in its true proportion, but which the increased payment to each member so unemployed shows fully. This is proved by the greatly disproportionate increase of expenditure in these years compared with the corresponding expenditure in brisk years. How terribly the labour market fluctuates year by year is another feature brought to our notice by even a slight glance at the movements of the curves. To remove those fluctuations, if possible, would probably do more real service to the labourer than a large percentage increase in a nominal money wage, which is ever an unknown quantity.

III.—*Prices of Commodities in* 1899. By A. Sauerbeck.

The following table shows the course of prices of forty-five commodities during the last twenty years as compared with the standard period of eleven years, 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1886, pp. 592 and 648, and 1893, pp. 220 and 247):—

Summary of Index Numbers. Groups of Articles, 1867-77 = 100.

	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.*	Wheat Harvest.†	Average Price of Consols.‡	Average Bank of England Rate.‡
1880	89	101	88	94	79	81	89	84	**88**	85·9	93	$98\frac{3}{8}$	$2\frac{3}{4}$
'81	84	101	84	91	77	77	86	80	**85**	85·0	97	100	$3\frac{1}{2}$
'82	84	104	76	89	79	73	85	80	**84**	84·9	100	$100\frac{1}{2}$	$4\frac{1}{8}$
'83	82	103	77	89	76	70	84	77	**82**	83·1	93	$101\frac{3}{16}$	$3\frac{9}{16}$
'84	71	97	63	79	68	68	81	73	**76**	83·3	103	101	3
1885	68	88	63	74	66	65	76	70	**72**	79·9	108	$99\frac{1}{4}$	3
'86	65	87	60	72	67	63	69	67	**69**	74·6	93	$100\frac{3}{4}$	3
'87	64	79	67	70	69	65	67	67	**68**	73·3	110	$101\frac{3}{4}$	$3\frac{3}{16}$
'88	67	82	65	72	78	64	67	69	**70**	70·4	96	101	$3\frac{3}{10}$
'89	65	86	75	75	75	70	68	70	**72**	70·2	103	98	$3\frac{6}{10}$
1890	65	82	70	73	80	66	69	71	**72**	78·4	106	$96\frac{1}{2}$	$4\frac{5}{10}$
'91	75	81	71	77	76	59	69	68	**72**	74·1	108	$95\frac{3}{4}$	$3\frac{3}{10}$
'92	65	84	69	73	71	57	67	65	**68**	65·4	91	$96\frac{3}{4}$	$2\frac{5}{10}$
'93	59	85	75	72	68	59	68	65	**68**	58·6	90	$98\frac{1}{2}$	$3\frac{1}{10}$
'94	55	80	65	66	64	53	64	60	**63**	47·6	106	101	$2\frac{1}{10}$
1895	54	78	62	64	62	52	65	60	**62**	49·1	91	$106\frac{1}{4}$	2
'96	53	73	59	62	63	54	63	60	**61**	50·5	116	111	$2\frac{5}{10}$
'97	60	79	52	65	66	51	62	59	**62**	45·3	100	$112\frac{1}{4}$	$2\frac{6}{10}$
'98	67	77	51	68	70	51	63	61	**64**	44·3	120	111	$3\frac{1}{4}$
'99	60	79	53	65	92	58	65	70	**68**	45·1	113	107	$3\frac{3}{4}$
Average													
1890–99	61	80	63	68	71	56	66	64	**66**	55·8	104	$103\frac{1}{2}$	3
'88–97	62	81	66	70	70	59	66	65	**67**	61·0	101	$101\frac{3}{4}$	$2\frac{9}{10}$
'78–87	79	95	76	84	73	71	81	76	**79**	82·1	97	$99\frac{1}{2}$	$3\frac{2}{10}$

* Silver 60·84*d*. per oz. = 100.

† Wheat harvest in the United Kingdom, 1880-83, 28 bushels per acre = 100, from 1884, 29 bushels = 100.

‡ Consols and bank rate actual figures, not index numbers; consols $2\frac{3}{4}$ per cent. from 1889.

The index number for all commodities was 68, against 64 in 1898, or 32 per cent. below the standard period 1867-77, and 14 per cent. below the ten years 1878-87, but 3 per cent. *above* the average of the last ten years. As compared with 1898 the advance amounted to four points (or $6\frac{1}{4}$ per cent.), while the rise on 1896, the lowest year on record, was as much as seven points (or $11\frac{1}{2}$ per cent.). The rise was smaller than was probably expected by many observers, and this is explained by the fact that the average advance for the whole year applied only to materials, and here principally to minerals, to a smaller extent to textiles, and to a very slight extent to sundry materials. Articles of food, on the other hand, were in the aggregate lower—an advantage no doubt to consumers—and were exactly on a level with 1897, so that the advance obtained in 1898 was again lost.

Four articles out of the forty-five contained in my tables showed records of lowest prices, viz., Brazil coffee, flax, coarse wool, and the average import price of tea.

The monthly fluctuations were as follows:—

December, 1889....	73·7	December, 1896....	62·0	July, 1899....	67.9
,, ’90....	71·1	,, ’97....	62·4	August, ,, ...	68·3
,, ’91....	71·4	,, ’98....	63·8	September, ,, ...	70·0
,, ’92....	67·7	January, ’99....	65·4	October, ,, ...	71·5
’93....	67·0	February, ,, ...	65·8	November, ,, ...	71·6
,, ’94 ..	60·1	March, ,, ...	65·6	December, ,, ...	72·3
February, 1895....	60·0	April, ,, ...	66·1	January, 1900....	74·0
December, ,, ...	61·2	May, ,, ...	66·6	February, ,, ...	75·1
July, 1896....	59·2	June, ,, ...	66·9		

The index number at the end of 1899 was 13 per cent. higher than at the end of 1898, and only 2 per cent. lower than at the end of 1889.

Taking articles of food and materials separately, the index numbers compare thus (1867-77 = 100):—

	Average.			Dec., 1889.	Feb., 1895.	July, 1896.	Dec., 1897.	Dec., 1898.	Dec., 1899.
	1878-87.	1888-97.	1890-99.						
Food	84	70	68	73·1	63·8	60·0	66·5	65·6	65·1
Materials ...	76	65	64	74·2	57·0	58·6	59·4	62·4	77·5

Articles of food were a little lower, but materials 24 per cent. higher than in December, 1898, while the rise for materials from the lowest point in February, 1895, amounted to as much as 36 per cent. in the aggregate. Articles of food, on the other hand, were only 8½ per cent. above their lowest record point in July, 1896.

The position of the six separate groups of commodities at the end of the last three years in comparison with former periods is illustrated by the following index numbers (1867-77 = 100):—

	Average.			Dec., 1897.	Dec., 1898.	Dec., 1899.	Last Year, per Cent.
	1878-87.	1888-97.	1890-99.				
Vegetable food, corn, &c.	79	62	61	65·0	62·4	58·7	fall 6
Animal food (meat and butter)	95	81	80	77·1	76·9	78·9	rise 3
Sugar coffee, and tea	76	66	63	51·0	52·5	53·7	,, 2
Minerals	73	70	71	66·6	75·7	98·3	,, 30
Textiles	71	59	56	48·4	49·9	71·2	,, 43
Sundry materials	81	66	66	62·8	63·1	68·8	,, 9

In this comparison it must be remembered that minerals had already an advance of 14 per cent. in the year 1898 against only 3 per cent. for textiles.

In the course of last year prices of corn remained generally on a low level, the small wheat crop of the world of 1897 (283 million quarters) having been followed in 1898 by the largest on record (358 million quarters), and in 1899 by another good crop (324 million quarters). Meat and butter were somewhat dearer, the latter being affected by the drought in August. Sugar and the common sorts of tea ruled a little higher than in the preceding year, though both articles are still on a very low basis, the average import price of all sorts of tea imported having been the lowest on record. Brazil coffee, under the influence of four large crops in succession, was lower than ever before, Santos touching 25*s.* per cwt. in September, but improving again to 32*s.* towards the end of the year. Metals generally reached their highest points between July and October, but gave way to some extent later on, while coals obtained almost famine prices at the end of the year and early in 1900. The following comparison of prices may be of interest:—

	Average.		End Dec.,	Highest, July—Oct.,	End Dec.,	End Jan.,
	1867-77.	1890-99.	1898.	1899.	1899.	1900.
Iron, Scotch.... *s.* per ton	69	47	49½	75½	65¾	68½
Copper .... £ ,,	75	50	57½	79¼	70	71¼
Tin .... £ ,,	105	81	86	150½	112	130
Lead .... £ ,,	20½	12	13¼	17½	16⅝	16¾
Coals, best house coals. In London....*s.* per ton	22	17½	17½	21	23	27
Coals. Average export price ....*s.* per ton	12½	10⅜	10	10¾	12⅝	14½

Iron has not been so high since 1874, but copper and tin, although very dear, were still higher during the speculation in 1887-88.

Among textiles we have to record an advance for cotton, in view of a large consumption and lower estimates of the current crop, but prices during the past year were still very low as compared with former periods. Flax touched the lowest price on record, improved gradually and realised a sharp advance in December. Manila hemp experienced great fluctuations in conjunction with the policy of opening and again closing the port; the price was 17*l.* per ton at the end of 1897, 24*l.* 10*s.* in 1898, and about 64*l.* at the end of last year, probably the highest figure on record, certainly since 1866. Merino wool, the production of which had been declining owing to a change in breeding and to five years of drought in Australia with great mortality of sheep, advanced over 60 per cent., and has not been so high since 1880, while the bulk of coarse wools occupied the lowest level on record for the greater part of the year, and only improved to some extent towards the end. Silk was considerably higher. Among sundry materials hides, tallow, petroleum, various oils, and indigo advanced to some extent.

The average price of silver was 27$\frac{7}{16}$*d.* per oz. against 26$\frac{15}{16}$*d.* in 1898. It stood at 27$\frac{5}{16}$*d.* (index number 44·9) at the end of 1898, and with the exception of a moderate speculative movement in April and May, the metal remained remarkably steady and closed at 27$\frac{3}{16}$*d.* per oz. (index number 44·7). The shipments to India and China were large, and Russia purchased also a larger quantity than in the previous year.

*Quarterly Movements of Prices.**

Summary of Index Numbers, 1867-77 = 100.

Years.	Quarters.	Vegetable Food (Corn, &c.).	Animal Food (Meat, &c.).	Sugar, Coffee, and Tea.	Total Food.	Minerals.	Textiles.	Sundry Materials.	Total Materials.	Grand Total.	Silver.†
1889....	IV	66·3	86·0	67·2	73·1	83·9	70·7	68·1	73·2	73·2	71·4
'94....	IV	53·2	78·4	60·8	64·1	62·3	48·2	63·5	58·5	60·9	46·6
'95	I	54·2	77·3	61·3	64·2	60·8	46·5	63·1	57·3	60·3	46·4
	II	57·9	77·5	60·9	65·8	61·3	49·8	65·5	59·6	62·2	50·0
	III	53·7	80·3	61·2	65·1	63·5	54·6	66·1	61·9	63·2	50·0
	IV	51·6	74·0	62·2	62·1	63·8	56·8	65·5	62·4	62·3	50·5
'96	I	50·4	71·7	62·8	60·8	63·2	55·5	64·5	61·4	61·1	51·1
	II	49·2	71·4	61·2	59·9	62·4	53·7	62·8	59·9	59·9	51·4
	III	50·5	75·2	56·6	60·9	62·2	53·2	62·1	59·4	60·1	50·6
	IV	60·3	74·3	55·2	64·4	65·9	54·1	62·8	60·9	62·4	49·1
'97	I	57·5	77·3	55·2	64·3	65·8	52·0	62·5	60·2	61·9	48·0
	II	56·1	80·0	52·0	64·0	64·0	51·5	62·3	59·4	61·3	45·7
	III	62·1	80·1	51·0	66·4	65·4	51·1	63·2	60·1	62·8	41·5
	IV	65·0	78·4	50·3	66·8	66·7	48·8	62·3	59·3	62·5	44·7
'98	I	67·0	78·0	50·5	67·6	67·0	49·4	62·9	59·9	63·1	42·4
	II	76·2	75·0	50·4	70·3	69·2	52·4	64·5	62·1	65·5	44·1
	III	65·0	78·1	51·3	67·0	71·0	51·5	63·9	62·0	64·1	45·4
	IV	62·4	76·8	52·3	65·6	75·0	50·4	63·3	62·5	63·8	45·5
'99	I	61·4	78·8	53·2	66·0	83·7	52·8	62·6	65·3	65·6	45·1
	II	59·1	79·8	54·5	65·8	89·2	54·6	62·0	67·1	66·5	46·3
	III	59·4	79·6	53·7	65·6	96·3	57·5	64·4	70·9	68·6	44·9
	IV	59·6	77·4	53·6	64·8	98·8	68·7	68·7	76·8	71·8	44·5

* The four quarterly figures of each year do not in all cases exactly (in the decimals) agree with the annual averages, as the latter are partly calculated from revised figures. See also the Society's *Journal*, 1893, p. 221, and 1895, p. 144.

† Silver 60·84*d.* per oz. = 100.

The quarterly numbers show the average of three monthly figures, and by thus eliminating minor fluctuations they give a more reliable comparison of the gradual changes of the various groups of commodities. They indicate the low level of articles of food generally, with a falling tendency during the year, and the uninterrupted rise of materials.

The following figures show in each case the average index numbers of all the forty-five commodities for ten years (see the dotted line in the diagram of the *Journal*, 1886); they give the best picture of the gradual movement of the *average* prices of *whole periods*, as the ordinary fluctuations are still further obliterated:—

1818-27 = 111
'28-37 = 93
'38-47 = 93
'48-57 = 89
'58-67 = 99
'68-77 = 100

1878-87 = 79
'80-89 = 76
'81-90 = 75
'82-91 = 74
'83-92 = 72
'84-93 = 71

1885-94 = 69
'86-95 = 68
'87-96 = 68
'88-97 = 67
'89-98 = 66
'90-99 = 66

Should the present level of prices be maintained for some years, the average of whole periods will experience a turn for the better.

The *past year* will, on the whole, be considered a very prosperous one, and the activity of the manufacturing industries in Europe, as well as in America, was greater than at any time since 1871-73, the period after the Franco-German war. It is true that one great industry—agriculture—was not prosperous, particularly in this country, as prices were low for corn, moderate for meat, and very depressed for the greater part of the year for domestic wool. But the harvest was fairly good, and as the year 1898 had been a very profitable one, a balance had probably been carried over to make good any shortcomings. The manufacturing industries, on the other hand, were exceedingly busy and very prosperous in nearly all branches—engineering, shipbuilding, the cotton, woollen, linen, and silk industries. The working classes were fully employed, and had the great advantage of higher wages, combined with low prices for food. The war in South Africa has not had an unfavourable effect on trade up to the end of the year, but its influence on the gold supply has contributed to make the money market still tighter, in conjunction with the great internal trade demands in Europe, and the absorption of gold by the United States, India, and Argentina. No doubt speculation has contributed to the rise of some articles, particularly some of the metals, but most of the development appears to have been thoroughly sound, and the prospects for the present year are generally held to be favourable, though the slow progress of the war up to the middle of February has made the tone in this country rather quieter, while trade on the continent has been affected by coal strikes and the continuation of dear money in some countries.

The production of *gold* was estimated at 59 million £ in 1898, and may have reached about 64 million £ in 1899. A decline in South Africa owing to the war is more than compensated by a considerable increase in Australasia, and a further expansion in the United States and British North America. It is a curious fact that last year's production, both in Australia and the United States, was larger than at any time during the early rich discoveries in the middle of the century. In 1898 the United States, according to their official returns, retained about 41 million £, and in 1899 another 14 million £. Nearly 6 million £ in sovereigns had to be forwarded to South Africa last year, and nearly 5 million £ were acquired by the Indian Treasury, while a strong demand for gold for Argentina set in towards the end of the year to pay for the increased value of the wool clip. There is every prospect that with peace again established in South Africa gold mining will still considerably increase. Extra demands from India and South America, and possibly from Italy and Spain, may have to be covered, but on the whole the supply will be more than sufficient for all requirements, and may contribute to keep up a somewhat higher range of prices or give a fresh stimulus to the production of commodities.

The arithmetical mean of the forty-five index numbers, which is 68 (against 64 in 1898), has, as in former years, again been subjected to two tests:—

Firstly, by using the same index numbers of the separate articles, but calculating each article according to its importance in the United Kingdom on the average of the three years 1894-96, when the mean for 1899 is 67·0, against 64·7 in 1898, 62·5 in 1897, and 60·5 in 1896; or on the average of the five years 1871-75, when the mean for 1899 is only 66·3 against 64·7 in 1898, 62·6 in 1897, and 60·2 in 1896. Measured according to quantities the rise is smaller than in the case of the ordinary index number, while in the two preceding years the advance had been larger. The result is no doubt surprising, and the explanation must be sought in the fact that such important articles as wheat, barley, oats, and potatoes were higher in 1897 and 1898 and *lower* in 1899, counterbalancing to some extent the movements of iron, coals, and wool, while tin, copper, and hemp, which had a very great rise in 1899, are articles of less importance.

Secondly, by calculating the quantities in the United Kingdom at their actual values (the production on the basis of my price tables, the imports at Board of Trade values, and consequently a considerable portion according to a different set of prices) and at the nominal values on the basis of the average prices from 1867-77. In this case the mean is 67·2, against 64·6 in 1898, 63·5 in 1897, and 62·0 in 1896.

The following table gives the figures which have served for the second test (see also the Society's *Journal*, 1886, pp. 613—19):—

Movements of Forty-five Commodities in the United Kingdom (Production and Imports).

	Estimated Actual Value in each Period.	Nominal Values at Average Prices of 1867-77, showing Increase in Quantities.	Movement of Quantities,		Movement of Quantities from Period to Period.	Ratio of Prices according to this Table, 1867-77 = 100.
			1848-50 = 100.	1871-75 = 100.		
	Mln. £'s and dec.	Mln. £'s and dec.				
Avge. 1848-50....	219·8	294·8	100	56	—	74·6
,, '59-61...	350·1	382·7	130	73	30% over 1849	91·5
,, '69-71....	456·6	484·6	164	92	27% ,, '60	94·2
,, '71-75....	548·8	526·3	178	100	—	104·3
,, '74-76....	537·8	538·4	183	102	—	99·9
,, '79-81....	489·7	578·5	196	110	19% over 1870	84·6
,, '84-86....	445·7	610·1	207	116	—	73·0
,, '89-91....	504·1	685·2	233	130	18% over 1880	73·6
,, '94-96....	453·7	723·5	245	137	—	62·7
1896....................	461·2	743·0	252	141	—	62·0
'97....................	465·1	732·2	248	139	—	63·5
'98....................	498·7	772·4	262	147	—	64·6
'99*	518·0	770·3	261	146	12% over 1890	67·2

* 1899 subject to correction after publication of the complete mineral produce returns.

The nominal values at the uniform prices of 1867-77 show the exact movements of quantities in the aggregate. Last year's quantities were 12 per cent. larger than in 1890, 46 per cent. larger than in 1871-75, and 161 per cent. larger than in 1849.

The price movements of the *external* trade of this country—total imports into the United Kingdom and exports of British and Irish produce—were as follow, 1873 called 111 in accordance with my index number (see the Society's *Journal*, 1897, p. 187) :—

	Total Imports into United Kingdom and Exports of British and Irish Produce.			Ratios 1873 = 111.	
	Declared Value.	Value at Prices of Preceding Year.	Values at Prices in 1873.	British Trade.	My Arithmetical Index Numbers.
	Mln. £'s.	Mln. £'s.	Mln. £'s.		
1873	626·0	—	626	111·0	111
'89	675·3	664·5	1,005	74·6	72
'96	681·7	671·5	1,162	65·1	61
'97	685·6	689·5	1,176	64·7	62
'98	704·0	703·1	1,201	64·8	64
'99	749·7	724·7	1,241	67·1	68

It has frequently been pointed out that the Board of Trade values must necessarily change more slowly than actual market prices, and will in a falling period generally be too high, and in a rising period too low; but anyhow the various tables contain abundant evidence that my index numbers give a fair, and within a few per cent. correct, illustration of the course of general wholesale prices of commodities.

Construction of the Tables.

The Table of *Index Numbers* is based on the average prices of the eleven years 1867-77, and the index numbers have been calculated in the ordinary arithmetical way; for instance, English wheat:—

	s.	*d.*	
Average, 1867-77....	54	6	= 100, average point.
,, '55	74	8	= 137, or 37 per cent. above the average point.
,, '99	25	8	= 47, ,, 53 ,, below ,,

The index numbers therefore represent simple percentages of the average point.

Certain articles which appear to have something in common have been grouped together, with the following result :—

		Example for 1899	
		Total Numbers.	Average.
1. Vegetable food, corn, &c. (wheat, flour, barley, oats, maize, potatoes, and rice)	With 8 Index Nos.	477	60
2. Animal food (beef, mutton, pork, bacon, and butter)	„ 7 „	552	79
3. Sugar, coffee, and tea	„ 4 „	212	53
1—3. *Food*	„ 19 „	1,241	65
4. Minerals (iron, copper, tin, lead, and coals)	„ 7 „	641	92
5. Textiles (cotton, flax, hemp, jute, wool, and silk)	„ 8 „	467	58
6. Sundry materials (hides, leather, tallow, oils, soda, nitrate, indigo, and timber)	„ 11 „	715	65
4—6. *Materials*	„ 26 „	1,823	70
General average	„ 45 „	3,064	68

The *general average* is drawn from all forty-five descriptions, which are treated as of equal value, and is the simple arithmetical mean as shown above.

*Average Prices of Commodities.**

No. of Article	0	1	2	3	4	5	6	7	8	1—8	9
		Wheat.		Flour.	Barley.	Oats.	Maize.	Potatoes.*	Rice.		Beef.‡
Year.	Silver.†	English Gazette.	American.	Town Made White.	English Gazette.	English Gazette.	American Mixed.	Good English.	Rangoon Cargoes to Arrive.	Vegetable Food. Total.	Prime.
	d. per oz.	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per sack (280 lbs.).	*s.* and *d.* per qr.	*s.* and *d.* per qr.	*s.* per qr.	*s.* per ton	*s.* and *d.* per cwt.		*d.* per 8 lbs.
1885........	$48\frac{5}{8}$	32·10	35	29	30·1	20·7	23	75	7	—	52
'86........	$45\frac{3}{8}$	31	35	28	26·7	19	21	80	6·7	—	49
'87........	$44\frac{5}{8}$	32·6	34	28	25·4	16·3	$21\frac{1}{4}$	85	6·10	—	43
'88........	$42\frac{7}{8}$	31·10	37	30	27·10	16·9	$23\frac{1}{2}$	80	7·1	—	48
'89........	$42\frac{11}{16}$	29·9	35	29	25·10	17·9	20	80	7·3	—	47
1890........	$47\frac{11}{16}$	31·11	35·6	29	28·8	18·7	20	70	7·3	—	47
'91........	$45\frac{1}{16}$	37	40	33	28·2	20	28	92	7·11	—	47
'92........	$39\frac{13}{16}$	30·3	33	28	26·2	19·10	$21\frac{3}{4}$	70	7·8	—	47
'93........	$35\frac{5}{8}$	26·4	27·6	26	25·7	18·9	20	65	6·2	—	48
'94........	$28\frac{15}{16}$	22·10	23·6	22	24·6	17·1	20	70	5·10	—	47
1895........	$29\frac{7}{8}$	23·1	25·6	23	21·11	14·6	$19\frac{1}{2}$	80	5·6	—	47
'96........	$30\frac{3}{4}$	26·2	29	25	22·11	14·9	15	55	6·2	—	45
'97........	$27\frac{9}{16}$	30·2	34·6	30	23·6	16·11	$14\frac{3}{4}$	70	6·9	—	47
'98........	$26\frac{15}{16}$	34	37	33	27·2	18·5	$17\frac{3}{4}$	82	7·2	—	46
'99........	$27\frac{7}{16}$	25·8	30	$26\frac{1}{2}$	25·6	17	18	70	7·2	—	49
Average 1890-99	34	$28\frac{1}{2}$	$31\frac{1}{2}$	$27\frac{1}{2}$	$25\frac{1}{2}$	$17\frac{1}{2}$	$19\frac{1}{2}$	72	$6\frac{3}{4}$	—	47
'88–97	37	29	32	$27\frac{1}{2}$	$25\frac{1}{2}$	$17\frac{1}{2}$	$20\frac{1}{4}$	73	$6\frac{3}{4}$	—	47
'78–87	50	40	$43\frac{1}{2}$	$34\frac{1}{2}$	$31\frac{1}{2}$	21	25	102	8	—	$55\frac{1}{2}$
'67–77	$58\frac{1}{2}$	$54\frac{1}{2}$	56	46	39	26	$32\frac{1}{2}$	117	10	—	59
	Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.										
1885........	79·9	60	62	63	77	79	71	64	70	546	88
'86........	74·6	57	62	61	68	73	65	69	66	521	83
'87........	73·3	60	61	61	65	63	65	73	68	516	73
'88........	70·4	58	66	65	71	64	72	69	71	536	81
'89........	70·2	55	63	63	66	69	61	69	72	518	80
1890........	78·4	59	63	63	73	72	61	60	72	523	80
'91........	74·1	68	71	72	72	77	86	79	79	604	80
'92........	65·4	56	59	61	67	76	67	60	77	523	80
'93........	58·6	48	50	54	66	72	61	56	62	469	81
'94........	47·6	41	42	48	63	66	61	60	58	439	80
1895........	49·1	42	46	50	56	56	60	68	55	433	80
'96........	50·5	48	52	54	59	57	46	47	62	425	76
'97........	45·3	55	62	65	60	65	45	61	67	480	80
'98........	44·3	62	66	72	70	71	55	70	72	538	78
'99........	45·1	47	54	58	66	65	55	60	72	477	83

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* The annual prices are the averages of twelve monthly or fifty-two weekly quotations; potatoes of eight monthly quotations, January to April and September to December.

† Index numbers of silver as compared with 60·84*d.* per ounce being the parity between gold and silver at 1 : $15\frac{1}{2}$; not included in the general average.

‡ Meat (9—13), by the carcase, in the London meat market.

Average Prices of Commodities—Contd.

No. of Article	10	11	12	13	14	15	9—15	16A	16B	17	18A*	18B*
	Beef.	Mutton.		Pork.	Bacon.	Butter.		Sugar.			Coffee.	
Year.	Mid-dling.	Prime.	Mid-dling.	Large and Small, Average.	Water-ford.	Fries-land, Fine to Finest.	Animal Food. Total.	British West Indian Refining.	Beet, German, 88 p. c., f.o.b.	Java, Floating Cargoes.	Ceylon Planta-tion, Low Mid-dling.	Rio, Good Channel.
	d. per 8 lbs.	*d.* per 8 lbs.	*d.* per 8 lbs.	*d.* per 8 lbs.	*s.* per cwt.	*s.* per cwt.		*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.	*s.* per cwt.
1885........	44	56	47	45	68	111	—	13½	14¼	17½	60	39
'86........	40	62	50	45	67	100	—	11¾	11¾	14¼	68	46
'87........	36	52	42	43	61	103	—	11¾	12½	14½	90	78
'88........	39	58	47	40	61	100	—	13	13¾	16	80	64
'89........	39	63	50	43	66	102	—	16	16½	19	95	76
1890........	38	59	45	42	62	100	—	13	12½	15¼	101	83
'91........	40	53	42	39	63	106	—	13½	13½	15½	101	76
'92........	38	53	42	48	68	108	—	13½	13¾	16	104	68
'93........	39	53	42	50	68	106	—	14¼	15	17¼	103	81
'94........	37	55	42	44	59	98	—	11¼	11¼	13¾	102	75
1895........	37	58	44	37	54	93	—	10	10	12	98	74
'96........	34	53	39	35	50	98	—	10¾	10½	12½	95	58
'97........	36	55	41	44	59	94	—	9¼	8⅞	11	95	40
'98........	36	52	37	45	58	95	—	9½	9½	11¾	92	32
'99........	40	54	41	40	51	103	—	10½	10	12¼	90	31
Average 1890-99	37½	54½	41½	42½	59	100	—	11½	11½	13¾	98	62
'88-97	37½	56	43½	42	61	100	—	12½	12½	14¾	97	70
'78-87	46	64½	53	49	71	116	—	17	18	21½	78	52
'67-77	50	63	55	52	74	125	—	23	24	28½	87	64
	Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.											
											*	*
1885........	88	89	85	87	92	89	618	59		62	69	61
'86........	80	98	91	87	91	80	610	50		50	78	72
'87........	72	83	76	83	82	82	551	52		51	104	122
'88........	78	92	85	77	82	80	575	57		56	92	100
'89........	78	100	91	83	89	82	603	69		67	109	119
1890........	76	94	82	81	84	80	577	54		54	116	130
'91........	80	84	76	75	85	85	565	57		54	116	119
'92........	76	84	76	92	92	86	586	58		56	120	106
'93........	78	84	76	96	92	85	592	62		61	118	127
'94........	74	87	76	85	80	78	560	48		48	117	117
1895........	74	92	80	71	73	74	544	43		42	113	116
'96........	68	84	71	67	68	78	512	46		44	109	91
'97........	72	87	75	85	80	75	554	39		39	109	64
'98........	72	84	67	87	78	76	542	40		41	106	50
'99........	80	86	75	77	69	82	552	44		43	103	48

* Index numbers not included in the general average.

Average Prices of Commodities—Contd.

No. of Article	18	19A*	19B*	19	16—19	1—19	20	21	22	—	23
	Coffee.	Tea.			Sugar, Coffee, and Tea.		Iron.		Copper.		Tin.
Year.	Mean of 18A and 18B.	Congou, Common. *d.* per lb.	Average Import Price. *d.* and dec. per lb.	Mean of 19A and 19B.	Total.	Food. Total.	Scotch Pig. *s.* and *d.* per ton	Bars, Common. £ per ton	Chili Bars. £ per ton	English Tough Cake. £ per ton	Straits. £ per ton
1885	Prices, see preceding page, 18A and 18B.	6½	12·06	—	—	—	41·10	4⅞	43	47	87
'86		6½	11·77	—	—	—	39·11	4⅝	40	44	98
'87		5	10·58	—	—	—	42·3	4⅝	44	47	112
'88		4	10·99	—	—	—	39·11	4⅞	81	78	117
'89		4¼	10·79	—	—	—	47·9	6¼	51	54	93
1890		4½	10·65	—	—	—	49·7	6⅜	54	59	94
'91		5½	10·70	—	—	—	47·2	5⅝	51	55	91
'92		4⅞	10·07	—	—	—	41·10	5½	45	48	93
'93		5⅜	9·74	—	—	—	42·4	5	44	47	85
'94		4¼	9·59	—	—	—	42·8	4⅞	40	43	68
1895		4⅛	9·63	—	—	—	44·5	4⅞	43	46	63
'96		4	9·55	—	—	—	46·10	5	47	50	60
'97		4	9·36	—	—	—	45·4	5¼	49	52	62
'98		4½	9·13	—	—	—	47·2	5½	52	55	72
'99		5½	8·87	—	—	—	63·9	7¼	74	78	123
Average 1890-99		4⅝	9¾	—	—	—	47	5½	50	53	81
'88-97		4½	10⅛	—	—	—	45	5⅜	50	53	83
'78-87		6¾	12¾	—	—	—	46	5½	55	60	89
'67-77		11¼	17¼	—	—	—	69	8¼	75	81	105
	Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.										
		*	*								
1885	65	58	70	64	250	1,414	60	59	57	—	83
'86	75	58	69	64	239	1,370	58	56	53	—	93
'87	113	44	62	53	269	1,336	61	56	59	—	107
'88	96	36	64	50	259	1,370	58	59	108	—	111
'89	114	38	63	50	300	1,421	69	76	68	—	89
1890	123	40	62	51	282	1,382	72	77	72	—	90
'91	118	49	62	56	285	1,454	68	68	68	—	87
'92	113	43	59	51	278	1,387	61	66	60	—	89
'93	123	48	57	53	299	1,360	61	61	59	—	81
'94	117	38	56	47	260	1,259	62	59	53	—	65
1895	115	37	56	47	247	1,224	64	59	57	—	60
'96	100	36	56	46	236	1,173	68	61	63	—	57
'97	86	36	54	45	209	1,243	66	64	65	—	59
'98	78	40	53	46	205	1,285	68	67	69	—	69
'99	75	49	51	50	212	1,241	92	88	99	—	117

* Index numbers not included in the general average.

Average Prices of Commodities—Contd.

No. of Article	24	25	26	20—26	27	28	29A	29B	30A	30B	31
	Lead.	Coals.			Cotton.		Flax.		Hemp.		Jute.
Year.	English Pig.	Wallsend Hetton in London	Average Export Price.	Minerals. Total.	Middling American.	Fair Dhollerah	St. Petersburg.	Russian, Average Import.	Manila Fair Roping.	St. Petersburg Clean.	Good Medium.
	£ per ton	*s.* per ton	*s.* and dec. per ton		*d.* per lb.	*d.* per lb.	£ per ton	£ per ton	£ per ton	£ per ton	£ per ton
1885.......	11⅝	16½	8·95	—	5⅝	4¼	34	35	35	29	12
'86.......	13¼	16	8·45	—	5⅛	3 9/16	35	35	29	29	11½
'87.......	12⅞	16	8·32	—	5½	3 9/16	32	31½	34	29	12¼
'88.......	13⅞	16½	8·41	—	5 9/16	3⅞	29	28	37	26	13¼
'89	13	17½	10·21	—	5 15/16	4⅛	28	28	50	26	15
1890.......	13¼	19	12·62	—	6	3 15/16	27	26	39	26	13¼
'91.......	12½	19	12·16	—	4 11/16	3¼	28	26	32	24	13
'92.......	10⅝	18½	11·04	—	4 3/16	3	28	26	28	24	15
'93.......	9¾	19½	9·90	—	4⅝	3 9/16	34	31½	26	24	13
'94	9⅝	16½	10·50	—	3 13/16	2⅝	32	33	22	24	12½
1895.......	10¾	15	9·33	—	3 27/32	2¾	26	28	19	25	11
'96...	11½	15	8·85	—	4 11/32	3 3/32	26	27	17½	25	12¼
'97.......	12⅝	15¾	8·98	—	3 29/32	3 1/32	24½	27	16	25	11
'98.......	13¼	16¾	9·92	—	3 5/16	2½	24	25½	27	25	11
'99.......	15⅜	18½	10·72	—	3 9/16	2¾	23	24½	41	27	12½
Average 1890-99	12	17½	10⅜	—	4¼	3	27	27½	26½	25	12½
'88-97	12	17¼	10¼	—	4 11/16	3 5/16	28	28	28½	25	13
'78-87	14	16¾	9	—	6	4¼	33	34	35½	26½	15
'67-77	20½	22	12½	—	9	6¾	46	48	43	35	19
	Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.										
1885	57	75	72	463	62	63	73		82		63
'86.......	65	73	68	466	57	53	75		74		61
'87.......	63	73	67	486	62	53	68		81		64
'88.......	68	75	67	546	62	58	61		81		70
'89.......	63	80	82	527	66	61	60		97		79
1890	65	86	101	563	67	58	56		82		70
'91	61	86	97	535	52	48	57		72		68
'92 ...	52	84	88	500	46	45	57		67		79
'93	48	89	80	479	51	53	70		64		68
'94	47	75	84	445	42	39	69		59		66
1895 ...	52	68	75	435	43	41	57		56		58
'96......	56	68	71	444	48	46	56		55		64
'97.......	62	72	72	460	43	45	55		53		58
'98.......	65	76	79	493	37	37	52		67		58
'99......	75	84	86	641	40	41	51		87		66

Average Prices of Commodities—Contd.

No. of Article	32A	32B	33	34	27—34	35A	35B	36	37A	37B	38
	Wool.			Silk.		Hides.		Leather.	Tallow.		Oil.
Year.	Merino, Port Phillip, Average Fleece.	Merino, Adelaide, Average Grease.	English, Lincoln Half Hogs.	Tsatlee.	Textiles. Total.	River Plate, Dry.	River Plate Salted.	Crop Hides, 30–45 lbs	St. Petersburg, Y.C.	Town.	Palm.
	d. per lb.	*d.* per lb.	*d.* per lb.	*s.* per lb.		*d.* per lb.	*d.* per lb.	*d.* per lb.	*s.* per cwt.	*s.* per cwt.	£ per ton
1885	16½	6¾	9⅞	12¾	—	8¾	6½	15	38	30½	30
'86	15½	6⅝	10	13¾	—	8	5¾	15	31	26	24
'87	15¾	7	10⅝	14½	—	7¾	6¼	15	31	24	22
'88	15¾	7	10⅜	13	—	6¾	4⅞	14	36	28	22
'89	17½	8¼	11	13½	—	6¼	5	13½	38	27	25
1890	16	7½	11	14	—	5¾	5½	13	38	26	27
'91	14¾	6⅞	9¾	13	—	5½	5⅛	13	40	27½	26
'92	13	6	8¾	12¼	—	5½	4⅝	13	45	27	24
'93	12¾	6	10¼	12½	—	5½	4⅞	13	48	30½	28
'94	11¾	5⅜	10⅛	10	—	5½	4¾	12½	48	25½	24½
1895	12	5⅝	12	10	—	7⅛	6¼	13½	48	23	23
'96	13	6⅜	11½	10½	—	6¾	5½	13½	48	21	22
'97	12¼	6	9⅝	10¼	—	6½	5½	13½	40	20	22
'98	13¼	6⅝	8¾	10½	—	7	6⅛	13½	40	22	23
'99	17¼	8½	8¼	13	—	7⅜	6¼	13½	—	25	25
Average 1890-99	13½	6½	10	11½	—	6¼	5½	13¼	43	25	24½
'88-97	14	6½	10½	12	—	6⅛	5¼	13½	43	25½	24½
'78-87	18½	8⅜	11¾	15	—	8⅝	6¾	15	41	35½	32½
'67-77	21¼	9⅞	19¾	23	—	9	7	16	45	45	39

Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.

Year	32A–32B	33	34	27—34	35A–35B	36	37A–37B	38
885	73	50	55	521	95	94	76	77
'86	70	51	60	501	85	94	63	61
'87	72	54	63	517	88	94	61	56
'88	72	53	57	514	73	87	71	56
'89	82	56	59	560	70	84	72	64
890	76	56	61	526	70	81	71	69
'91	70	49	57	473	66	81	75	67
'92	61	44	53	452	63	81	80	61
'93	60	52	54	472	65	81	87	72
'94	55	51	43	424	64	78	82	63
895	57	61	43	416	84	84	79	59
'96	62	58	46	435	77	84	77	56
'97	59	49	45	407	75	84	67	56
'98	64	44	46	405	82	84	69	59
'99	83	42	57	467	85	84	56	64

Average Prices of Commodities—Contd.

No. of Article	39	40A	40B	41	42	43	44	45A	45B	35—45	20—45	1—45
	Oil.		Seeds.	Petroleum.*	Soda.		Indigo.	Timber.				
Year.	Olive.	Linseed.	Linseed.	Refined.	Crystals.	Nitrate of Soda.	Bengal, Good Consuming.	Hewn, Average Import.	Sawn or Split, Average Import.	Sundry Materials. Total.	Materials. Total.	Grand Total.
	£ per tun	£ per ton	*s.* per qr.	*d.* per gall.	*s.* per ton	*s.* per cwt.	*s.* per lb.	*s.* per load	*s.* per load			
1885........	39	22	44	6⅞	55	10½	5¼	48	45	—	—	—
'86........	38	20½	42	5⅞	49	10	5	43	43	—	—	—
'87........	34	20½	38	5⅝	50	9½	4¾	38	42	—	—	—
'88........	36	18½	39	6½	48	10	4¾	41	44	—	—	—
'89........	35	20	42	5¾	51	9½	4½	47	49	—	—	—
1890........	41	23	43	5½	61	8½	4¼	44	46	—	—	—
'91........	43	21	42	5⅝	64	8¾	4¾	40	43	—	—	—
'92........	36	18½	39	5	66	8¾	4½	40	44	—	—	—
'93........	36	20½	42	4	58	9¼	5½	38	43	—	—	—
'94........	35	20¼	38	3⅞	42	9¼	5	36	44	—	—	—
1895........	36	20¼	37	6	39	8¼	4¼	37	42	—	—	—
'96........	30	17½	33	5½	42	8	4¼	40	44	—	—	—
'97........	31	15	33	4¾	51	7¾	4	41	47	—	—	—
'98........	32	16¾	36	5⅛	54	7¾	3½	42	47	—	—	—
'99........	33	20	40	6¼	56	7¾	3½	40	49	—	—	—
Average 1890–99	35	19¼	38	5⅛	53	8¼	4⅜	40	45	—	—	—
'88–97	36	19½	39	5¼	52	8¾	4½	40½	44½	—	—	—
'78–87	40	23	46	6⅞	62	12½	6	47	47	—	—	—
'67–77	50	30	60	12½*	92	14	7¼	60	54	—	—	—
	Index Numbers (or Percentages) of Prices, the Average of 1867-77 being 100.											
1885........	78	73		* 55	60	75	72	81		836	1,820	3,234
'86........	76	69		47	53	71	69	76		764	1,731	3,101
'87........	68	65		45	54	68	66	70		735	1,738	3,074
'88........	72	63		52	52	71	66	74		737	1,797	3,167
'89........	70	69		46	55	68	62	84		744	1,831	3,252
1890........	82	73		45	66	61	59	79		756	1,845	3,227
'91........	86	70		45	70	63	66	73		762	1,770	3,224
'92........	72	64		40	72	63	62	74		732	1,684	3,071
'93........	72	69		32	62	66	76	71		753	1,704	3,064
'94........	70	65		31	46	66	69	70		704	1,573	2,832
1895........	72	64		48	42	59	59	69		719	1,570	2,794
'96........	60	56		44	46	57	59	74		690	1,569	2,742
'97........	62	53		38	56	55	55	77		678	1,545	2,788
'98........	64	59		41	59	55	48	78		698	1,596	2,881
'99........	66	67		50	61	56	48	78		715	1,823	3,064

* Petroleum as compared with the average from 1873-77 only.

IV.—*The Census of* 1901 *and the proposed Quinquennial Census.*

The Government Bill to provide for the taking of a Census in the United Kingdom in the year 1901, was introduced into the House of Commons on[1] the 19th February, 1900. Thereupon the Society despatched copies of the following memorandum to public bodies, scientific societies, Members of both Houses of Parliament, and others who were likely to aid them in their attempt to obtain a Quinquennial Census.

The Census of Great Britain (Bill 93 *of* 1900).

The Sub-Committee appointed by the Royal Statistical Society to consider matters relating to the Census of 1901, submit the following observations upon the Bill on that subject introduced into the House of Commons on the 19th February.

They note, in the first place, with much pleasure, the improvement in simplicity and general arrangement of the provisions, with special reference to the greater elasticity afforded by the delegation of most of the detail to the Registrars-General, instead of its incorporation in the statute. They cordially welcome, also, the introduction of Clause 9, whereby the use of the Census results in greater detail than is required for national purposes is materially facilitated. The transfer, again, of the assurance of the confidential nature of the inquiry, from the schedule to the statute, Clause 11(3), appears a commendable precaution. Judged from an exclusively statistical standpoint, irrespective of any other considerations, the return of language seems, from the results of the last Census, to be on a different plane in Wales to that which it occupies in Scotland and Ireland, nor does it seem likely that the general accuracy of the return will be materially enhanced by the exclusion of infants. This, however, is not a point on which the Society has dwelt in former representations; and, in respect to the recommendations on subjects of greater importance which have been made during the past year, the Society has reason to gratefully acknowledge the extent to which the suggestions it has from time to time supported have been recognised in the Bill.

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[1] The following account of the first reading of the Bill is taken from the Parliamentary report of the *Times* of the 20th February:—

Census (Great Britain) Bill.

"Mr. T. W. Russell, on behalf of the President of the Local Government Board, asked for leave to bring in a Bill for taking the census for Great Britain in 1901. He said the Bill differed in two respects from the measure passed in 1890 for a similar purpose. It applied to Scotland, which in previous years had a separate measure; and as a great deal which was done in the previous Bill by express enactment was now to be done by instruction, the present measure was much shorter.

"Mr. Lewis (Flint Boroughs) said that, as the next Census would be at the beginning, not only of a new decade, but of a new century, it was worth while to consider whether at such an epoch in our history the scope of the valuable information obtained through the Census might not be considerably enlarged.

"Leave having been given, the Bill was brought in and read the first time."

The Sub-Committee made, in all, nine suggestions. Of these, one has not yet been brought before Parliament; another has been adopted in part only; six have found recognition; and one only has been ignored. The results are briefly as follows:—

I. Uniformity has been secured in two of the three Kingdoms.
II. In Clause 1 the date recommended by the Society has been adopted.
III. In Clause 4 (1) (a) the nationality of those born abroad is to be recorded.
IV. In Clause 4 (3 and 4) the "tenement" is substituted for the "story."
V. In Clause 5 (1) the prescription that schedules are to be copied into books has been omitted, and in Clause 10 (1) (c) the matter is left to the Registrars-General.
VI. In Clause 5 (2) the record of houses occupied, though not inhabited by night, is ensured. And
VII. The early introduction of the Bill this session allows, probably, fair, though not abundant, time for preparations.

But whilst the efforts of the Society have so far met with gratifying success, it must be acknowledged that it has been felt a grievous disappointment to all statisticians interested in the movement of the population and the progress of Public Health, to note that the Bill contains no provision for an Intermediate Census of the simple character recommended by not only the Statistical Society, but by a very considerable weight of opinion in the Medical, Actuarial, and Municipal worlds. Experience has proved on several occasions of late that whatever the degree of accuracy obtainable in forecasting the population at a given date when counted in millions, no method of approximation is applicable for practical purposes to smaller aggregates, such as those of cities and counties, after the lapse of four or five years from a general Census. It follows, too, that where a considerable variation in population is due to other than natural increase, the age-distribution of the community in question is also apt to diverge from that recorded at the preceding enumeration. With these considerations in view, not only new populations like some of the British Colonies, but the older countries of the Continent of Europe, even including France, where the population is almost stationary, have deemed it worth while to adopt five years as the interval between their enumerations. The Statistical Society, however, has not recommended that the enumeration should be on each occasion in the full detail of a decennial Census, which is the plan adopted abroad, but has always held that the population by sex and age will suffice at the intermediate period. The project, though supported by the Departmental Committee of 1890, was shipwrecked on the rock of expense, but this consideration carries less weight if it be held that the intermediate Census is a necessary supplement to that of the decennial period, and that without it the latter loses a great part of its value after a few years. The simpler enumeration, it is estimated, would cost less than half as much as a general Census, and for 50,000*l.* or so, would maintain the continuity of observation to an extent to which all those interested attach the highest value.

The Sub-Committee, accordingly, express the hope that they may rely upon the co-operation of their colleagues, and also upon that of Medical, Sanitary, Actuarial, and Economic Bodies in bringing home the importance of this question to Members of Parliament, in order to get, if possible, the interpolation in the Bill of some such provisions as the following:—

(1.) In the title, line 1, the addition of "s" to year, and in the margin, the words "and 1906."

(2.) In the next line, after "one," add "and one thousand nine hundred and six."

(3.) Add to Clause 1 the words, "also in the year one thousand nine hundred and six, on a date to be fixed hereafter by the Local Government Board."

(4.) In Clause 4 (i), add after sub-section (d) the following sub-section—

"(e.) At the census of one thousand nine hundred and six, particulars of name, sex, and age, and none other, shall be required to be entered."

8th March, 1900.

The Bill was read a second time on the 9th March, 1900, and the *Times* of the 10th March reported the proceedings as follows:—

Census (*Great Britain*) *Bill.*

"Mr. Chaplin (Lincolnshire, Sleaford) formally moved the second reading of this Bill.

"Sir F. Powell (Lancashire, Wigan) thanked the President of the Local Government Board, on behalf of the Statistical Society, for the readiness with which he had complied with many of the suggestions they had submitted to him. A number of the changes which had been made in this Bill, as compared with the Act of 1891, were such as would lead to greater clearness and accuracy in the returns and had made the provisions more elastic and flexible. He greatly regretted, however, that the Government had not seen their way to adopt the quinquennial Census, which was now in operation in several continental countries and many of their colonies. It might be said that a five years Census would render necessary a Census Office, but he should not in any degree regret that change. While the other departments collected, in the interest of trade and commerce, many statistics, should the State not collect information with regard to human beings? He felt certain that great benefits would arise from the possession of such knowledge. Speaking entirely for himself, he regretted that there was an entire omission of any question as to religion. Statistics as to religion were collected in other countries, and he was not aware that there was any dissatisfaction with the system. The Bill contained provisions of great value as to securing absolute secrecy, and he therefore did not think any danger could possibly arise in stating religious creed. He hoped they would have the Census returns more promptly than on previous occasions. It was a melancholy experience to see these volumes coming out week after week and even year after year. (Hear, hear.)

"Mr. Munro-Ferguson (Leith) was also in favour of a five years Census, and he thought it would be well to have a permanent Census department. With regard to the committee which had considered the question, it was in favour of a five years Census; and although Lord Welby, who represented the Treasury, put in a memorandum that did not present an absolute bar to their proposal, it suggested that the Government should authorise an intermediate Census in a district which might require it. There could be no doubt, from the evidence given before the committee, that they were behind some other countries in this matter. Another point was as to the character of the enumerators. In Scotland the work was good, in Ireland it was tolerably well done, but in England it was very badly done—the enumerators were not, in many cases, reliable. He did not know whether any security was to be taken as to that.

"Mr. HERBERT ROBERTS (Denbighshire, W.) thought it was unfortunate that a Sunday should be fixed upon. The papers were to be delivered on a Saturday and collected on a Monday. He hoped the Government would consider whether the day could be altered. He thought it would be necessary to very carefully consider the clause relating to language in Wales.

"Sir E. DURNING-LAWRENCE (Cornwall, Truro) also urged that a five years Census should be adopted, and that a Census department should be established. There was a strong feeling that, owing to their present system, they did not get their information in time to be of very much use. If they could get it promptly it would be of enormous value, enabling their merchants to compete more successfully with foreign nations. It was one hundred years since the first Census was taken, and he hoped this opportunity would be taken to establish a five years Census.

"Captain SINCLAIR (Forfar) said that if the Government were not able to promise the establishment of a permanent Census Department, they might at least consider the proposal, urged on them by the Royal Statistical Society, to take a quinquennial Census of a less elaborate kind than the decennial Census.

"Mr. COURTNEY (Cornwall, Bodmin) said that, as chairman of the departmental committee appointed to consider this matter before the last Census, he wished to express the strong feeling of all statisticians and those concerned in watching the movements of the people, as to the propriety and almost the necessity of an enumeration of the people at shorter intervals than ten years. Really we were very much behind the world in having only a decennial Census. In many places where large populations grew up in consequence of new industries and sources of wealth, the sanitary regulations and provisions which should keep pace with the growth of population were delayed for many years. There were many false anticipations as to the results of the Census in 1881 and in 1891, showing that the most careful estimates of the Registrar-General were often very far out. It was really a scandal that on account of a little expense this reform should be longer delayed. What was wanted was not that absolute reproduction of the full Census taken at the decennial period. The same complete return of occupations and other details was unnecessary; but there should be some record of the movement of population to place us in a better position for social and political action. He would urge upon the President of the Local Government Board the necessity of yielding to the pressure which had been brought to bear on him now for so many years by statisticians, sanitary reformers, and municipal authorities. (Hear, hear.)

"Mr. CARVELL WILLIAMS (Nottinghamshire, Mansfield) said that the Government had exercised a wise discretion in excluding religions from the Census. To be effective, the Census must be taken with the goodwill of the people; and the introduction of the question of religion would lead to bitter and exasperating controversy.

"Mr. BUCHANAN (Aberdeen, E.) said that it was unfortunate that the precedent of former years had been departed from by the inclusion of Scotland and England in one Bill, instead of introducing a separate Bill for Scotland.

"Mr. CHAPLIN said that there was no desire on the part of the Local Government Board to trench on Scotch questions. Scotland had been included in the present Bill merely to save parliamentary time in a session when probably less time than usual would be available for legislation. In all essential respects, with the exception of the inclusion of Scotland and of certain particulars which had been suggested by the Royal Statistical Society, to whom he wished to make his acknowledgments, the Bill was the same as that of 1890. A number of superfluous clauses had been eliminated, as they could be embodied in the instructions to the enumerators more conveniently. As to the desirability of having a Census not so complete or elaborate as the present every five years, he quite acknowledged that there were many advantages to be gained by it, and that course was recommended by the departmental committee. But the introduction of the present Bill was not the least in conflict with such a proposal. The Government had considered the question and had decided that, upon the whole, if a quinquennial Census were to be taken, it should be provided for by a special Bill in 1905. The mind of the Government was perfectly open on the question, and the fact that the present Bill did not provide for a quinquennial Census did not preclude the Government from dealing with the question when the time came. It had been said by the Hon. Member for the Leith district that we were much behind other countries in some respects in connection with the Census. That might be so in certain cases, but it was not so in all. America had often been quoted, but he had reason to believe that the Census returns in America were far less satisfactory than those in this country, and very often much more inaccurate. The Hon. Member said that the returns were good in Ireland, better still in Scotland, but altogether to be condemned and very bad in England. The instructions which the Local Government Board were by the Bill empowered to issue would leave a very wide discretion to the department, and if the charges made against enumerators in England were founded upon fact, it would be necessary to make better selections in future. The Hon. Member for Denbighshire complained of the day selected for the Census, both on the ground that it was fixed for 31st March, and also on the ground that the day was Sunday. Sunday was not the day on which the work would be done, and it had been chosen because it was a day on which the majority of people were likely to be at home. He was glad to think that, on the whole, the Bill had been favourably received, and he hoped that on an early day it might be allowed to pass into law, because there was a great deal of work to be done in connection with the collection of the returns; and the Registrar-General's Office was very desirous to have an opportunity of proceeding with the work at the earliest moment. (Hear, hear.)

"The Bill was read a second time."

The House commenced the consideration of the Bill in Committee on the 15th March, when the discussion principally turned on a proposal that the schedule should include questions as to the religious beliefs of the people. This is a matter from which the Society has held entirely aloof. No alterations were made in any of the clauses of the Bill, and on the consideration of Clause 13, progress was reported.

The Committee resumed consideration of the Bill on the 19th March, and it then passed its committee stage without modification and was read a third time.

It had been thought that the amendments suggested by the Society for the purpose of providing for the taking of an intermediate Census in 1906 might have been introduced into the Bill in Committee: the necessary notices were indeed placed on the amendment book by Sir Francis S. Powell, M.P. for Wigan, and a Vice-President of the Society, but the amendment could not be put, being ruled out of order as tending to enlarge the scope of a Government measure.

It is hoped, however, that whilst public attention is turned to the subject, the desired object may be achieved by other means.

V.—*Commercial History and Review of* 1899.

The following is taken from the Supplement to the *Economist* of 17th February, 1900, in continuation of similar extracts for previous years:—

"Seldom has this country enjoyed a year of such all-round industrial activity and prosperity as it did in 1899. Exactly in what measure the trade of the year was affected by the war in South Africa it is impossible to say. No doubt that did impart a stimulus to certain branches of industry—such, for example, as the iron, coal, and shipping trades. On the other hand, however, the expenditure on coal and iron in its various forms constitutes so large a portion of the cost of production in other industries, that to whatever extent the war operated to force up the prices of those staples, its influence upon trade as a whole was prejudicial. So, too, with freights. The displacement of shipping resulting from the war by enhancing the cost of sea transport, imposed an additional burden upon our foreign commerce. Then, again, the stringency in the money market which prevailed during the latter part of the year, and which, undoubtedly, hampered trade, was largely the outcome of the war. And a disturbing effect upon business was also produced by the calling out of our reserve forces, in consequence of which large numbers of men were withdrawn from their customary occupations. Looked at broadly, therefore, the war was more of a restraining than a stimulating influence, and it is consequently all the more gratifying that in spite of it the year was one of exceptionally flourishing and expanding trade. What the movement was in our foreign trade will be seen from the following statement:—

	1899.	1898.	Increase.	
			Amount.	Per Cent.
	£	£		
Imports	485,076,000	470,379,000	14,697,000	3·13
Exports of home products (exclusive of ships sold to foreigners)	255,465,000	233,359,000	22,106,000	9·47
Re-exports of foreign and colonial merchandise	65,020,000	60,655,000	4,365,000	7·10
Total	805,561,000	764,393,000	41,168,000	5·39
Value of new ships exported	9,195,000	Not recorded	—	—
	815,756,000	—	—	—

"The feature in this table is the relatively large increase in our exports as compared with our imports, inasmuch as for years prior to 1899 it was the imports that showed the greatest expansion. And this holds good both of the volume and the value of the trade. In Appendix A we give an analysis of the year's returns, which shows how much of the increase in the aggregate value of the imports and exports respectively was due to an expansion in the volume of the business transacted, and how much to changes in prices. With the movements in prices we shall deal presently. As to quantities, here is how 1899 compares with immediately preceding years :—

Volume of our Foreign Trade. Increase or Decrease per Cent. as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cnt.	Per cnt.	Per cnt.
1899..................	+ 0·72	+ 2·68	+ 1·43
'98..................	+ 4·59	− 0·14	+ 2·82
'97..................	+ 1·64	− 1·29	+ 0·51
'96..................	+ 6·06	+ 4·87	+ 5·50
'95..................	+ 5·54	+ 8·57	+ 6·66
'94..................	+ 9·95	+ 3·35	+ 7·39
'93..................	− 1·42	− 2·10	− 1·68

"The increase in the imports last year was, it will be observed, much smaller than that which took place in 1898 and previous years. That, however, was mainly due to a shortage in our supplies of cotton, of which we received fully 23½ per cent. less than in 1898. Wool and jute also reached us in smaller quantities, but of nearly all the other chief commodities that we import we increased, and in some cases considerably increased, our takings. And the exports, as has already been said, make a much more favourable exhibit. The growth shown by them compares with a decrease in immediately preceding years, and while it was mainly in coal and in metal and textile manufactures, it extended to most of the chief categories into which our exports are classed. And a special feature of it is the extent to which it was diffused over the entire field of our foreign commerce. Of all the principal foreign countries with which we trade, there are only some half-dozen or so to which the value of our exports failed to show a more or less substantial increase last year as compared with 1898, and the only two of these of any importance were Turkey and Brazil. So too with our colonies. As was to be expected, shipments to South Africa were curtailed by the war, and a few of our smaller West Indian and African possessions had, for special reasons, to reduce their purchases from us; but the falling off in these cases was far more than offset by the expansion in other directions, and more particularly in our exports to the important markets of India, Australasia, and Canada.

"So much has been said in late years of the effect on our export trade of foreign competition, and more especially of the competition of the United States and Germany, that it may be of interest to compare our own statistics of last year with those of our rivals whose returns are now available. We give, therefore, the following statement :—

Exports of Home Products.

	1899.	1898.	Increase.	
			Amount.	Per Cent.
	£	£	£	
Great Britain	255,465,000	233,359,000	22,106,000	9·47
Germany	207,585,000	200,528,000	7,057,000	3·52
France	155,966,000	140.436,000	15,530,000	11·06
United States	250,581,000	246,712,000	3,869,000	1·57

This table, it must be explained at the outset, needs to be read with some qualifications. Our exports are valued at the prices of 1899, which were higher than those of 1898, whereas those of France, and in the main those of Germany also, are valued at the 1898 prices. How in these cases the revision of prices that will be effected later on will alter aggregate values it is impossible to say, so much depends upon the character of the goods in which the increase of shipment has taken place. All that we can now do is to note that when the revaluation on the basis of the prices of 1899 has been made, the real increase in the value of the exports of Germany and France in 1899, as compared with 1898, will be greater than is shown in the above table. And, with regard to the United States, account has to be taken of the fact that last year the value of the exports of agricultural products was about 14,000,000*l.* less than in 1898. It is to that mainly that the relative smallness of the increase in the total value of the exports is due. Of articles classed as manufactured, the exports from the States last year amounted to 76,158,000*l.*, as compared with 61,585,000*l.* in the previous year. Included in these totals, however, are exports of mineral oils and copper to the value of 20.135,000*l.* in 1899, and 16,638,000*l.* in 1898. These are dubiously classed as manufactured articles, and if we omit them the value of the exports of that category works out at 56,023,000*l.* for 1899, and 44,947,000*l.* in 1898, thus showing an increase of 11,097,000*l.*, or close upon 25 per cent., which was mainly in the manufactures of iron and steel. This much it has been necessary to explain in order that too great importance should not be attached to the relatively large increase in the value of our exports last year, as compared with that in those of Germany and the United States. But when it is remembered that the exports of manufactured articles from this country are not only far larger in amount, but constitute also a far larger proportion of the total exports than in the case of the other countries with which comparison is made, the inference from the statistics given would seem to be that although every year we have a keener competition to face in foreign markets, we are on the whole meeting it with a fair degree of success. And that success is not being attained at the expense of the home consumers, as it is in the case of those countries whose protective policy enables manufacturers to sell at lower prices abroad than would be possible if they were not put in a position to recoup themselves by the artificially enhanced prices they obtain for their products in the home markets.

"In dealing with our home trade there are no such complete statistics to guide us as those by which we are enabled to take a comprehensive view of our foreign commerce. There is every reason, however, to believe that the one branch of our business was at least as expansive as, if not more expansive, than the other. We know, for instance, that the phenomenal activity in the steel and iron trades was largely owing to the war requirements of our own Government. Then, again, out of the increased output of shipping last year only 19 per cent. was built to the order of foreign and colonial Governments, as compared with 22 per cent. in 1898 and 25 per cent. in 1897. And on a perusal of the detailed reports in regard to our various industries that are published herewith, it will be found that in many instances the home trade is spoken of as the main factor in creating the measure of increased prosperity they enjoyed. The same conclusion, too, may be deduced from our railway traffic returns. The traffic receipts of the fifteen chief English railway companies are summarised in the appendix, and here is how they compare with those of the previous year:—

	1899.	1898.	Increase.	
			Amount.	Per Cent.
	£	£	£	
Passengers	34,341,600	33,519,200	822,400	2·5
Merchandise	22,903,700	21,997,600	906,100	4·1
Minerals	16,300,700	15,264,900	1,035,800	6·8

"Passenger traffic is largely affected by weather and other circumstances which have little bearing upon the condition of trade. But it will be observed that the growth in the merchandise and mineral traffic was much larger than that which was shown in the volume of our foreign trade, and is thus indicative of greater activity in our home industries as well. Some light also is thrown upon the condition of our home trade by the returns of the London and provincial bankers' clearing houses, which compare with those of the previous year thus:—

	1899.	1898.	Increase or Decrease.	
			Amount.	Per Cent.
	£	£	£	
London Clearing House (exclusive of Stock Exchange and Consols pay days)	7,203,932,000	6,462,583,000	+ 741,349,000	11·5
Manchester	222,562,000	204,952,000	+ 17,610,000	8·6
Liverpool	144,649,000	128,962,000	+ 15,686,000	12·2
Newcastle	77,455,000	66,208,000	+ 11,247,000	17·0
Birmingham	53,557,000	54,848,000	− 1,291,000	2·4
Bristol	27,949,000	26,485,000	+ 1,464,000	5·5

"It is not easy to account for the exceptional decline shown in the Birmingham clearings last year, seeing that, apart from the cycle trade, the industries of which that town is the centre report favourably as to the year's business. Be that as it may, the clearings at all the other centres show a marked expansion, which, though to some extent it may be due to an extension of banking facilities, must in the main be ascribed to the even greater activity of our home than our foreign trade.

"In reviewing, twelve months ago, the trade of 1898, we said that considering the industrial prosperity by which it was characterised, it might have been expected that there would have been during it some appreciable upward movement in the prices of commodities, but that, as a matter of fact, although prices were higher at the end of the year than at the beginning, the rise was very small indeed. The advance, however, which had only begun to manifest itself in 1898, made substantial progress in 1899. As registered by our index number, the movement was :—

	'Index Number,' representing the Combined Prices of Twenty-two Leading Commodities.		'Index Number,' representing the Combined Prices of Twenty-two Leading Commodities.
1st January, 1900	2145	1st January, 1897........	1950
,, July, 1899........	2028	,, ,, '96........	1999
,, January, '99........	1918	,, ,, '95........	1923
,, July, '98........	1915	,, ,, '94	2082
,, January, '98........	1890	,, ,, '93........	2121
,, July, '97........	1885	,, ,, '92........	2133

"This shows an average rise in prices for the year of close upon 12 per cent., and the index number now stands at a higher level than it has done since the latter end of 1891. The advance, while most marked in minerals and textiles, has extended in a varying measure to practically all the leading commodities, with the important exception of cereals, which fetched somewhat lower prices in 1899 than they did in 1898. Another comparison that can be made is between the average prices of our imports and exports in 1899 and 1898. That will be found worked out in Appendix A, and what it shows is that while last year the prices of our imports were, on the average, 1·78 per cent. higher than in 1898, the average rise in the prices of our exports was 6·62 per cent. As 1899 was a year in which the rise in prices was progressive, it will, of course, be understood that the average advance was smaller than the extreme variations between prices at the beginning and end of the year recorded by our index number. And, bearing this in mind, the following table shows how the movement in average prices in 1899 compared with that in previous years.

Prices of Imports and Exports. Average Rise or Fall as compared with previous Years.

	Imports Retained for Home Consumption.	Exports of Home Produce.	Imports and Exports.
	Per cnt.	Per cnt.	Per cnt.
1899	+ 1·78	+ 6·62	+ 3·56
'98	+ 0·24	− 0·26	− 0·07
'97	− 0·12	− 1·11	− 0·51
'96	+ 1·85	+ 1·24	+ 1·63
'95	− 3·54	− 3·48	− 3·52
'94	− 7·91	− 4·27	− 6·54
'93	− 2·26	− 1·71	− 2·05

"It will be readily gathered from this that, taken as a whole, the gain we realised on our exports last year, owing to the rise in prices, considerably outweighed the loss resulting from the higher prices we had to pay for our imports. Altogether, the imports retained for home consumption cost us 7,363,000*l.* more than they would have done had we been able to obtain them at the same prices as in 1898, but, on the other hand, we got 15,852,000*l.* more for our exports than they would have fetched at the lower prices of the previous year. The fall in the prices of cereals reduced the cost of our imports of corn of all kinds by 5,700,000*l.*, and, not to multiply instances, while, because of higher prices, we had to pay about 6,000,000*l.* more for our imports of metals of all kinds, we gained for the same reason nearly 8,200,000*l.* on our exports of metals and manufactures thereof. Of course, a rise of prices is never an unmixed gain, especially when, as was the case last year, the rise is largely in the raw material for manufacture. It would appear, however, that last year, at all events, our manufacturers, owing to the general prosperity of our own people, and many of our chief foreign customers, were able to more than recoup themselves for any addition caused thereby to the cost of production. Despite the higher prices for cotton and other materials consumed by it, our cotton industry is reported to have been more remunerative in 1899 than at any time in the previous twenty years or so. Our woollen industry, although it had to overcome similar drawbacks, enjoyed, on the whole, a prosperous year. And, taking a more general survey, we have before us a list of 73 manufacturing and trading companies, few of them connected with the industries already mentioned or with the mineral and metal industries, which, of course, have flourished, and of these 35 were able to declare higher dividends than the previous year, 32 maintained the same rate, and only six paid a lower dividend.

"That during 1899 there was a further improvement in the condition of our industrial population is clearly shown by the statistics collected by the Labour Department of the Board of Trade, the value of which is much enhanced by the promptitude with which they are published. From these we learn that the proportion of the members of trade unions reporting to the department who were unemployed in 1899 was only 2·4 per cent., as compared with an average of 3 per cent. in 1898 and 5·2 per cent. in the seven years ending 1898. The past year, moreover, was comparatively little disturbed by labour disputes, and such as did take place were of a relatively unimportant character, and involved less interruption to work than in any previous year. The net result of the changes in wages reported to the department in 1899 is shown in the following statement, the corresponding figures for each of the previous five years being given for the purpose of comparison:—

Year.	Total Number of Individuals Affected by Changes in Rates of Wages.	Net Result on Weekly Wages of those Affected by Changes.		
		Total Amount.	Average per Head.	
			s.	*d.*
1899	1,111,197	+ 85,820	+ 1	6½
'98	1,015,169	+ 80,815	+ 1	7
'97	597,444	+ 31,507	+ 1	–¾
'96	607,654	+ 26,592	+ –	10½
'95	436,718	– 28,211	– 1	3½
'94	670,386	– 45,091	– 1	4¼

"Thus in the magnitude of the advance secured 1899 compares favourably with immediately preceding years, and, tracing its distribution, the department reports that 'Of the computed total amount of increase in weekly wages (86,000*l.*), 49,000*l.*, or 57 per cent., went to the coal miners; 13,000*l.*, or 15 per cent., to the iron and steel workers; and 6,400*l.*, or 7 per cent., to building trade operatives. Next in importance to these changes are the advances which took effect in the textile trades. For six years no general changes had been recorded in this group—the last reported movement being in the period 1892-93, when the cotton spinners sustained a decrease of 2·91 per cent., and the wages of the linen and jute workers of Dundee fell 5 per cent.' Of course, the increased purchasing power acquired by our working population, through fuller employment and better wages, has in its turn contributed to the prosperity of trade, and that the Chancellor of the Exchequer is greatly indebted to it for the exuberance of the revenue will be seen from the following record of the consumption of dutiable commodities in each of the past three years:—

		1899.	1898.	1897.
Tea	lbs.	242,561,000	235,414,000	231,400,000
Cocoa	,,	39,540,000	38,580,000	36,045,000
Coffee	cwts.	268,000	251,000	249,000
Tobacco	lbs.	78,641,000	75,164,000	71,195,000
Wines	galls.	16,662,000	16,617,000	15,853,000
Spirits, home	proof galls.	35,770,000	33,742,000	32,657,000
,, foreign	galls.	8,689,000	8,010,000	8,347,000
Beer	barrels	35,770,000	33,742,000	32,657,000

"In the increased prosperity of last year it must be doubted whether our great agricultural industry participated. Partly because of a reduction in the area under cultivation, the yield of our cereal crops fell below that of 1898, which, however, was in this respect an exceptional year. And for the smaller crops lower average prices were obtained. Still, though neither crops nor prices came up to the level of 1898, they compare favourably with those of other previous years, and in the increase in the number of live stock and the higher prices realised for cattle, farmers obtained some compensatory benefits, so that although, on the whole, they did not fare so well as they did in 1898, they may be credited with having had a fairly good year as our agriculturists have now come to reckon a good year. Subjoined is our usual statement showing cereal prices :—

Gazette Average Price of Wheat (per Imperial Quarter) in United Kingdom immediately after Harvest, 1893-99, *and Total Average Gazette Price of Calendar Years.*

Periods.	1899.		1898.		1897.		1896.		1895.		1894.		1893.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
After harvest	25	–	28	1	33	7	23	1	23	1	24	1	25	11
Calendar year average	25	8	34	–	30	2	26	2	23	1	22	10	26	4

Comparative Gazette Prices of Grain.

Week.	Wheat.						Barley.						Oats.					
	1899.		1898.		1897.		1899.		1898.		1897.		1899.		1898.		1897.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
July 29	25	2	36	11	28	10	22	5	24	2	17	10	18	2	20	11	19	–
Aug. 5	24	10	35	7	29	5	20	9	26	11	17	9	18	–	20	7	18	11
12	24	8	33	8	29	8	22	6	27	5	19	–	17	9	20	9	17	4
19	24	7	32	7	30	4	26	11	24	4	19	2	17	4	19	11	17	2
26	24	7	30	7	31	8	26	5	27	6	22	5	17	1	19	3	17	1
Sept. 2	25	–	28	1	33	7	25	10	27	8	25	11	16	7	18	11	17	–
9	25	5	26	10	33	1	26	5	27	9	27	4	16	6	17	10	17	3
16	25	4	25	7	33	10	27	1	26	10	28	11	16	2	16	10	17	–
23	25	4	25	5	33	11	27	4	26	9	29	7	16	1	17	1	16	8
30	25	6	25	9	33	4	26	11	27	–	29	10	16	5	16	7	16	4
Oct. 7	26	–	26	6	32	1	28	1	27	5	28	9	16	5	16	7	16	–
14	27	3	26	6	31	10	27	9	27	11	28	3	16	5	16	6	16	1
21	28	2	26	8	32	2	27	6	28	1	27	5	16	10	16	6	16	2
28	28	1	27	4	32	10	27	4	28	8	27	5	16	3	16	8	16	–
Nov. 4	27	2	28	4	33	5	27	2	28	6	26	10	16	7	17	2	16	5
11	26	7	28	4	34	–	26	9	28	7	26	3	16	5	17	5	16	3
18	26	1	28	1	33	11	26	4	28	5	26	2	16	7	17	2	16	5
25	25	8	27	9	33	8	26	2	28	4	25	9	16	7	17	1	16	8
Dec. 2	25	7	27	7	33	9	25	10	28	6	25	10	16	6	17	1	16	9
9	25	7	27	6	33	9	25	10	28	6	26	–	16	5	17	3	16	6
16	25	4	27	2	34	1	25	7	28	5	26	4	16	1	17	–	17	–
23	25	6	26	9	34	4	25	10	28	6	26	11	16	–	17	–	17	–
30	25	9	26	11	34	6	25	5	28	4	27	3	16	2	17	–	17	1

"No review of the trade of 1899 would be complete which failed to refer to the development during the year of the movement for combining into one big organisation or 'trust,' the whole, or as many as possible, of the producers in certain branches of industry. It is in the United States that this movement has attained its fullest dimensions, but it has made considerable progress here as well, especially in various departments of our textile industries. It is, of course, impossible to discuss here the economic aspects of this development. It is claimed for it that it will tend to lessen materially the costs of production and distribution without raising prices against consumers. On the other hand, however, it is evident that the process of amalgamation must lead to an inflation of capital. Inducements have to be held out in order to persuade the independent concerns to join the combination. The individual acumen, foresight, and skill which, inspired by the hope of personal gain, have done so much to develop our industries and perfect the means of production, are not likely to be found exercised in anything like the same degree by a board of directors. And although it is denied that the combinations aim at increasing prices, if once they gain anything like a monopoly in any particular branch of industry, the temptation to swell profits at the expense of consumers is one which they can hardly be trusted to resist. For these and other reasons, therefore, this extension of the 'trust' system will have to be watched very carefully and with a certain degree of suspicion.

"The dominating influences in the money market during 1899 were the activity of trade and the war. As the result of the former, accentuated as it was by the rise in the prices of commodities, the bank experienced throughout the whole year a steady pull upon its resources, the extent of which may be gauged from the fact that the net withdrawals of gold from it for home circulation and other home requirements amounted in the year to about 6,400,000*l.*, as compared with 3,000,000*l.* in 1898, and an average of 2¾ millions in the previous three years. In spite of this, the bank rate, which stood at 4 per cent. at the beginning of the year, was reduced in the middle of January to 3½ per cent., and again lowered at the commencement of February to 3 per cent., at which it remained until the first week in July. About the beginning of March, however, the bank reserve began to run down, and the directors were subjected to a good deal of criticism for not taking active measures to attract supplies of gold from abroad. Early in July the withdrawals of gold for home circulation compelled the bank to raise its rate to 3½ per cent., and there it stood till the first week in October, when the unusual step was taken of raising the rate first to 4½ and then to 5 per cent. in the course of a single week, such a double advance having occurred only twice in the previous thirty-three years. The reason for this movement was the rumours of war, and in the following week there came the Boer ultimatum and the consequent hostilities, whereby not only were the supplies of gold from South Africa stopped, but we were caused to ship considerable quantities of gold thither to pay current expenses. At 5 per cent. the bank rate stood until the end of November, when, owing to a drain of gold for Argentina, it was raised to 6 per cent., at which it remained till the end of the year. Whatever supineness the bank directors may have shown in protecting their reserve in the early part of the year, they are entitled to the credit of having acted with great energy in the later months, for, not content with raising the official rate, they also advanced their buying prices for foreign gold coins, and made advances at low rates on condition that they should be repaid in gold. And the success which attended those measures for attracting gold hither goes to show that the bank could, if it had been so moved, have readily enough overcome the opposition of the bullion brokers, of which so much was previously made. Throughout the year the outside market rates kept fairly close up to the official minimum, and were, indeed, at certain times, and especially in the December quarter, higher than that of the bank. There was consequently, as will be seen from the following statement, a larger margin than usual between the borrowing and the lending rates of the banks, and as they also benefited by the higher average value of money, and the active demand for it, the year was to them a distinctly profitable one.

	1899.	1898.	1897.	1896.
Changes in bank rate	six per cnt.	four per cnt.	six per cnt.	three per cnt.
Highest bank rate	6	4	4	4
Lowest ,,	3	2½	2	2
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Average market rate of discount, best three months' bills	3 5 –	2 11 10	1 15 10	1 8 7
Average allowance on deposits	2 3 6	1 13 –	1 1 10	– 19 6
Margin of profit	1 1 6	– 18 10	– 14 –	– 9 1

"For the past year or two there has been a good deal of talk about the desirability of the London joint-stock banks not only increasing their own cash reserves, but also co-operating more closely with the Bank of England, in order to enable it more effectually to protect and maintain the central cash reserves. And at the last meeting of the Union Bank the chairman, Mr. Felix O. Schuster, stated that the action of the bankers' committee, which has been considering this subject, had already borne fruit, as it was one of the causes why the market rates had, during the latter half of the year especially, been kept 'well up to the level, and often materially above those of the Bank of England.' But, while this is satisfactory so far as it goes, it unfortunately cannot be said that anything has yet been done towards increasing the too slender cash reserves which the banks themselves hold against their huge liabilities.

European Rates of Discount per Cent. per Annum, 1899.

Cities.	Beginning of Months of 1899.												
	Jan.	Feb.	Mar.	April.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Avge.
London.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
Bank rate	4	3	3	3	3	3	3	3½	3½	5	5	6	3·67
Open market	2⅝	$1\frac{15}{16}$	$2\frac{1}{16}$	2½	2¼	2⅜	2	$3\frac{9}{16}$	3¼	5¼	4¼	$5\frac{11}{16}$	3·25
Paris.													
Bank rate	3	3	3	3	3	3	3	3	3	3	3	3	3·08
Open market	3	$2\frac{15}{16}$	2⅞	2⅞	$2\frac{15}{16}$	2⅞	2⅞	$2\frac{15}{16}$	2¾	3	3	3	2·71
Vienna.													
Bank rate	5	5	5	5	5	4½	4½	4½	4½	6	6	6	5·23
Open market	4⅜	4⅜	4⅜	4½	4⅝	4⅜	4¼	4½	4½	5⅜	5¾	5⅝	4·45
Berlin.													
Bank rate	6	5	4½	4½	4½	4	4½	4½	5	6	6	6	5·23
Open market	4⅞	3¾	4	4⅜	3½	3⅝	4	4⅛	4⅝	5	5⅛	5⅝	4·47
Frankfort.													
Bank rate	6	5	4½	4½	4½	4	4½	4½	5	6	6	6	5·23
Open market	4½	3¾	4	4¼	3⅝	3⅝	4	$3\frac{15}{16}$	4⅝	5⅛	5¼	5⅝	4·25
Amsterdam.													
Bank rate	2½	2½	2½	2½	2½	2½	3	4½	4½	5	5	5	3·6
Open market	2¼	2¼	2⅛	1⅞	2⅜	2⅜	2¾	3¾	4	5	4⅞	4¾	3·26
Brussels.													
Bank rate	4	3½	3½	3½	3½	3½	4	3½	3½	4	5	5	3·83
Open market	3⅜	3	3	2¾	2¾	3¼	3¾	3¼	3½	3¾	4¾	4¾	3·57
Hamburg.													
Bank rate	6	5	4½	4½	4½	4	4½	4½	5	6	6	6	5·04
Open market	4⅝	3⅞	4	4¼	3⅝	3⅝	4	$3\frac{15}{16}$	4⅝	5⅛	5⅛	5⅝	4·72
St. Petersburg													
Bank rate	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5½	5·5
Open market	5½	6	6	6½	6	6	6	5½	5½	6½	6½	6½	6·1

"During the first half of 1899 the new capital applications amounted to a little over 88,000.000*l*., which was slightly in excess of the amount in the corresponding period of 1898. There was a great shrinkage, however, in the second half of the year, and the total for the twelve months falls considerably short of that of any year since 1895. The following is a statement of the amount offered quarter by quarter, with the figures for the like periods of the four preceding years for comparison :—

[000's omitted.]

	1899.	1898.	1897.	1896.	1895.
	£	£	£	£	£
First quarter	39,416,	48,054,	28,116,	30,925,	28,479,
Second ,, ...	48,697,	38,157,	47,777,	48,569,	23,710,
Third ,, ...	19,291,	37,705,	31,874,	41,287,	32,742,
Fourth ,, ...	25,765,	27,257,	49,522,	32,026,	19,759,
	133,169,	150,173,	157,289,	152,807,	104,690,

"And in the following statement the applications for the twelve months are classified as far as possible according to the various kinds of enterprise for which the money was sought to be obtained:—

	Whole Year. £
Foreign Government loans	9,900,000
Colonial ,,	7,398,600
British municipal and county loans	6,126,900
Colonial and foreign corporations	496,000
British railways	8,755,600
Indian and colonial railways	7,017,900
Foreign railways	11,853,600
Mining companies—	
Australasian	1,756,000
Rand	3,070,900
Rhodesia	840,000
Copper mines	2,423,700
Other ,,	3,524,300
Exploration and financial	6,539,000
Breweries and distilleries	8,524,700
Merchants, importers, and exporters	2,529,200
Manufacturing	14,367,300
Stores and trading	5,462,200
Estate companies	6,184,900
Iron, coal, and steel	7,215,100
Electric lighting, power, &c.	3,545,900
Gas and water	1,102,500
Hotels, theatres, and entertainments	2,867,400
Patents and proprietary articles	2,657,600
Docks, harbours, and shipping	3,584,000
Banks and insurance	2,042,500
Miscellaneous	3,383,900
	133,169,700

"The loans raised by foreign Governments were restricted to two issues, one of 9,000,000*l.* for the Japanese Government, and one of one-tenth of that amount, offered by the Brazilian Province of San Paulo. Nearly the whole sum placed upon the market by British Colonies was offered in the first quarter of the year, when four issues were made by South Australia, New Zealand, Victoria, and the Cape respectively, amounting in the aggregate to nearly 7,000,000*l.*

"So unfavourable has the condition of the market become for the absorption of that kind of security, that even leading home corporations have found it exceedingly difficult to place loans, except upon terms a great deal more onerous than those to which they have been accustomed, and to which they are unwilling to submit. Still, the total of such applications in the year amounted to the respectable sum of 6,127,000*l.*

"Our home railways, as usual, found it necessary to place substantial amounts of new stock, though the total of which any public notice was given amounted to only 8,756,000*l.*, as compared with 11,090,000*l.* in 1898. Of this, the principal items were issues of ordinary stock by the Midland and North-Eastern Companies, and preference stocks by the South-Eastern and Lancashire and

Yorkshire Companies. The 7 millions subscribed for Indian and Colonial railways were issued almost entirely in the first half of the year, and were divided in the proportion of about 4,000,000*l.* and 3,000,000*l.* between Rhodesia and India. Foreign railways were prominent in the latter part of the year, owing to the large additions made to their capital by Argentine railways for extensions and new connections. Earlier in the year large issues were made on account of the Chinese Imperial Railway and for a railway in Russia.

"Promoters of mining companies had few opportunities of enticing the speculative investor, the total amount raised for all descriptions of mines during the year being under 12,000,000*l.*

"The task of classifying the industrial companies is somewhat difficult, as many of the companies could be placed with equal appropriateness in several different groups. The manufacturing group naturally covers most ground, and comes out with by far the largest total for the year. That is partly because it includes the textile 'combines,' the latest of which, the calico printers, is a huge agglomeration with a capital running up to 9,200,000*l.* nominal. In the stores and trading group, the principal items were contributed by an augmentation of the capitals of existing undertakings. One of the less prominent features of the year's new companies was the number of joint-stock concerns formed to acquire blocks of flats in London or City offices, sometimes both together. No doubt this is a remunerative form of investment under good management, especially in times when there is a great scarcity of house accommodation in the metropolis. The business, however, seems, as usual, to be in danger of being overdone. Electrical enterprise did not attract capital on any considerable scale, most of the issues being merely additional amounts raised by existing companies.

"The following is a statement of the capital applications and calls made in each for the ten years ending 1899:—

	Capital Created and Issued.			Actual Money Calls.		
	In England.	England and elsewhere.	Total.	In England.	England and elsewhere.	Total.
	£	£	£	£	£	£
In 1899....	124,192,000	8,978,000	133,170,000	82,145,000	8,144,000	90,289,000
,, '98...	113,838,000	36,336,000	150,173,000	79,789,000	21,412,000	101,201,000
,, '97..	145,612,000	11,687,000	157,299,000	73,947,000	7,747,000	81,694,000
,, '96....	125,964,000	26,713,000	152,677,000	66,111,000	18,281,432	84,393,000
,, '95....	91,694,000	12,996,000	104,690,000	64,645,000	19,855,000	84,500,000
,, '94....	61,191,000	30,644,000	91,835,000	62,666,000	11,556,000	74,222,000
,, '93....	39,181,000	9,959,750	49,141,000	33,751,000	8,202,000	41,953,000
,, '92....	53,197,000	27,940,000	81,137,000	47,212,000	12,045,000	59,262,000
,, '91....	80,239,000	24,356,000	104,595,000	66,810,000	9,234,000	76,044,000
,, '90....	125,898,000	16,667,000	142,565,000	120,717,000	20,290,000	141,007,000

"The silver market in 1899 is thus reported upon by Messrs. Pixley and Abell:—'The extreme variations in the price of silver were small, and for the greater part of the year the price was steady, threatened weakness being again and again averted by opportune coinage orders both from Paris and Russia. These special orders were by no means of the same importance as those that so greatly influenced the market in 1898, and there were no more orders on Spanish account. In April there was a rush of speculative buying, causing a rapid rising to $29\frac{1}{8}$. This was partly based on the opinion that silver was unduly low, and great expectations were formed as to the future of the metal when the chief smelters in the United States formed a combination. New York was amongst the buyers at this time. In October the State of Gwalior sold about 200,000*l*. out of their holding of 4,000,000*l*. silver rupees, and as it was feared that these sales might continue, the market fell rapidly. China was a better buyer than usual, and about a million more than in 1898 was shipped. India bought intermittently, but part of the silver figuring in the Bombay exports was there coined into British dollars, and eventually went to the Straits.'

Monthly Fluctuations in Price of Bar Silver.

	1899.		1898.		1897.		1896.		1895.	
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
January	$27\frac{5}{8}$	$27\frac{1}{4}$	$26\frac{7}{8}$	$26\frac{1}{8}$	$29\frac{13}{16}$	$29\frac{11}{16}$	$30\frac{7}{8}$	$30\frac{1}{2}$	$27\frac{7}{16}$	$27\frac{3}{16}$
February........	$27\frac{1}{2}$	$27\frac{3}{8}$	$26\frac{1}{4}$	$25\frac{5}{8}$	$29\frac{3}{4}$	$29\frac{11}{16}$	$31\frac{9}{16}$	$30\frac{3}{4}$	$27\frac{11}{16}$	$27\frac{1}{4}$
March	$27\frac{9}{16}$	$27\frac{3}{8}$	$26\frac{1}{16}$	25	$29\frac{5}{8}$	$28\frac{5}{16}$	$31\frac{9}{16}$	$31\frac{1}{8}$	$29\frac{3}{4}$	$27\frac{5}{8}$
April	$28\frac{7}{8}$	$27\frac{3}{8}$	$26\frac{5}{16}$	$25\frac{11}{16}$	$28\frac{1}{2}$	$28\frac{3}{16}$	$31\frac{3}{16}$	$30\frac{13}{16}$	$30\frac{7}{8}$	$29\frac{7}{8}$
May	$28\frac{3}{4}$	28	$26\frac{7}{8}$	$25\frac{7}{8}$	$28\frac{3}{16}$	$27\frac{1}{2}$	$31\frac{1}{4}$	$30\frac{15}{16}$	$30\frac{7}{8}$	$30\frac{3}{16}$
June	28	$27\frac{11}{16}$	$27\frac{1}{2}$	$26\frac{11}{16}$	$27\frac{3}{4}$	$27\frac{1}{2}$	$31\frac{9}{16}$	$31\frac{3}{16}$	$30\frac{11}{16}$	$30\frac{3}{16}$
July................	$27\frac{3}{4}$	$27\frac{5}{8}$	$27\frac{7}{8}$	27	$27\frac{11}{16}$	$26\frac{3}{8}$	$31\frac{1}{2}$	$31\frac{3}{8}$	$30\frac{5}{8}$	$30\frac{3}{16}$
August	$27\frac{13}{16}$	$27\frac{1}{8}$	$27\frac{13}{16}$	$27\frac{1}{8}$	$26\frac{1}{2}$	$23\frac{3}{4}$	$31\frac{3}{8}$	$30\frac{3}{8}$	$30\frac{9}{16}$	$30\frac{1}{4}$
September	$27\frac{3}{8}$	$26\frac{15}{16}$	$28\frac{5}{16}$	$27\frac{11}{16}$	$27\frac{1}{4}$	$23\frac{3}{4}$	$30\frac{11}{16}$	30	$30\frac{9}{16}$	$30\frac{7}{16}$
October	$26\frac{15}{16}$	$26\frac{5}{8}$	$28\frac{1}{4}$	$27\frac{3}{16}$	$27\frac{1}{2}$	$25\frac{9}{16}$	$30\frac{5}{16}$	$29\frac{3}{4}$	$31\frac{3}{8}$	$30\frac{5}{8}$
November	$27\frac{5}{16}$	$26\frac{11}{16}$	$28\frac{5}{16}$	$27\frac{1}{2}$	$27\frac{1}{2}$	$26\frac{3}{8}$	$30\frac{3}{16}$	$29\frac{3}{4}$	31	$30\frac{5}{8}$
December	$27\frac{5}{16}$	$26\frac{15}{16}$	$27\frac{5}{8}$	$27\frac{1}{4}$	$27\frac{3}{4}$	$25\frac{15}{16}$	30	$29\frac{13}{16}$	$30\frac{11}{16}$	30
Yearly avge.	$27\frac{7}{16}$		$26\frac{15}{16}$		$27\frac{9}{16}$		$30\frac{3}{4}$		$29\frac{7}{8}$	
Highest price	$28\frac{7}{8}$		$28\frac{5}{16}$		$29\frac{13}{16}$		$31\frac{9}{16}$		$31\frac{3}{8}$	
Lowest ,,	$26\frac{5}{8}$		25		$23\frac{3}{4}$		$29\frac{3}{4}$		$27\frac{3}{16}$	

"The first half of the year 1899 was remarkably free from political disturbances of an international character, and as money rates were normal and trade very profitable, the range of Stock Exchange values at the end of June was generally higher than at the close of the year 1898. From that time onwards, however, there was a more or less continuous decline, owing to the course of the negotiations with the South African Republic, resulting in the outbreak of war in the middle of October. The depression was much accentuated by the British reverses during November and December and the squeeze in the money market, with the result that in the last fortnight of the year the general level of prices was lower than at any time during the twelve months, the close being very little above the worst. The monthly table compiled by the *Bankers' Magazine* affords a very good comparison of the movement of market values, by placing the figures for the last month of 1899 beside those for the corresponding date in the previous year. This shows that the value of the 325 securities enumerated was on 16th December, 1899, 3,121,417,000*l.*, as compared with 3,241,219,000*l.*, on 19th December, 1898, showing a net depreciation of 119,802,000*l.*, equal to 3·7 per cent. It must be pointed out, however, that this comparison is considerably more favourable than would be the case if it had been made up on the last day of the respective years. A leading instance is to be found in British Government stocks, the Consols quotation being 100½ on 16th December and 99¼ on the 30th, Two and a Half per Cents. fell from 98 to 97, and Local Loans Stock from 103 to 100. The subjoined table must consequently be read with due allowance for the further fall that took place after the compilation was made.

[000's omitted.]

Nominal Amount (Par Value).	Department, containing	Market Values middle of December,		Increase or Decrease.	
		1899.	1898.	Amount.	Per Cent.
£		£	£	£	
804,194,	14 British and Indian funds	811,218,	886,950,	− 75,732,	8·5
36,379,	8 Corporation (U.K.) stocks	39,988,	42,535,	− 2,547,	5·9
49,417,	11 Colonial Government stocks....	51,936,	52,626,	− 690,	1·3
29,823,	5 Ditto inscribed ditto. ..	31,472,	32,460,	− 988,	3·0
928,539,	30 Foreign Government ditto....	802,958,	805,254,	− 2,296,	0·3
213,007,	19 British Railway Ordinary........	325,034,	339,127,	− 14,093,	4·1
171,118,	14 Ditto Debenture ,, ...	196,807,	207,729,	− 10,992,	5·3
128,803,	13 Ditto Preference ,, ...	181,530,	190,249,	− 8,719,	4·5
47,010,	7 Indian Railways ,, ...	68,729,	75,014,	− 6,285,	8·3
56,014,	8 Railways in British possessions Ordinary	30,290,	28,410,	+ 1,880,	6·6
89,000,	10 American railway shares	79,566,	77,984,	+ 1,582,	2·0
59,545,	12 Ditto bonds (gold)	46,188,	47,213,	− 1,025,	2·2
7,605,	5 Ditto bonds (sterling)...........	8,673,	8,799,	− 126,	1·4
19,516,	12 Foreign railways	16,233,	15,417,	+ 816,	5·3
84,216,	9 Ditto obligations	60,089,	63,647,	− 3,558,	5·6
	30 Bank shares—				
35,190,	10 British bank shares	48.687,	46,892,	+ 1,795,	3·8
	4 Australasian bank shares	8,742,	7,636,	+ 1,106,	14·4
	6 Other colonial bank shares......................	7,012,	7,019,	− 7,	0·1
	10 Semi-foreign bank shares	15,666,	15,548,	+ 118,	0·7
7,038,	8 Corporation stocks (colonial and foreign)	7,551,	7,527,	+ 24,	0·3
6,167,	8 Financial, land	7,797,	7,710,	+ 87,	1·1
10,842,	4 Gas	29,494,	29,436,	+ 58,	0·2
3,956,	14 Insurance	21,648,	23,061,	− 1,413,	5·9
6,055,	7 Coal, iron, and steel	12,251,	10,632,	+ 1,619,	1·5
20,716,	6 Canal and dock	64,033,	66,599,	− 2,566,	3·8
4,529,	8 Breweries	12,085,	13,163,	− 1,078,	8·1
9,944,	15 Commercial, industrial, &c.	35,074,	33,344,	+ 1,730,	5·2
8,810,	10 Mines (chiefly South African)	47,618,	43,799,	+ 3,819,	8·0
4,966,	8 Shipping	6,839,	6,682,	+ 157,	2·3
17,914,	9 Telegraph and telephone	20,423,	22,762,	− 2,399,	10·3
4,066,	11 Tram and omnibus	5,045,	5,006,	+ 39,	7·7
8,553,	10 Waterworks	20,741,	20,989,	− 248,	1·2
2,868,932,	325 Totals	3,121,417,	3,241,219,	− 119,802,	3·7

"The circumstances referred to above affected British Government securities in a special degree, since it became obvious that the expenditure on account of the war would not only put a stop to the usual Government purchases of stock, but would probably necessitate new issues of considerable amount. It is not surprising, therefore, that the depreciation in British and Indian funds, as compared with the previous year, was very much larger, both actually and proportionately, than that which occurred in any other group of securities.

"Foreign Government stocks, though the general range of values was lower, showed only a small net depreciation, a big rise in Spanish and a smaller improvement in the securities of one or two South American States partly counteracting the effect of the general movement. The ordinary stocks of British railways compared very unfavourably in market value at the end as compared with the beginning of the year. They were affected not only by the general *malaise* in the stock markets, but also by the consideration that working expenses were increasing out of all proportion to the expansion in gross earnings, an anticipation that has since been fully borne out by the published accounts. The only exceptions to the fall were Great Eastern and London, Chatham, and Dover stocks. An exception to the general depreciation occurred in the group of American railway ordinary shares, though even this was mainly due to particularly marked advances in the prices of certain stocks which offset comparatively small declines elsewhere; in all cases, however, prices at the end of the year were much below the highest touched in the twelve months. The securities of both the Canadian railways showed a marked appreciation on balance, the improvement in their position upholding them against outside circumstances of a depressing character. There was also a distinct improvement in the market values of Argentine railway stocks, the lines having enjoyed an exceptionally prosperous year. Among miscellaneous issues, bank shares of all descriptions were quoted higher than at the end of the previous year, the conditions having been for the most part favourable to profitable banking operations. Coal and iron shares were in favour throughout, the industries being very prominent in the trade boom which was, as we have shown, a feature of the year 1899.

"South African mining shares, in spite of the stoppage of work and the great uncertainty as to their fate which prevailed at the close of the year, showed very little depreciation as compared with the end of 1898, and stood at a much higher level than, say, four months before. A number of the principal West Australian producing mines had greatly risen in market value, but, as in so many other cases, the prices at the end of the year were far below the highest recorded in the interval. Copper mining shares steadily advanced in price, in sympathy with the constant increase in the price of the metal.

APPENDIX (A.)—*Volume and Value of our Foreign Trade of* 1899 *compared with that of* 1898.

"For a number of years past it has been our practice to analyse the annual Trade and Navigation Returns, so as to show to what extent the recorded movements in values have been due to variations in the volume of the year's trade, and how far to alterations in prices. The details of this analysis for the year 1899 will be found in the numbers of the *Economist* of the 20th and 27th January, and we now, as usual, bring together the main figures, in order that the broad results may be more clearly indicated :—

I. *Imports.*

	1899.		1898.
	Value in Trade and Navigation Returns.	Value Calculated at Prices of 1898.	Value in Trade and Navigation Returns.
	£	£	£
Living animals	9,515,000	9,219,000	10,386,000
Articles of food and drink	195,525,000	200,385,000	193,731,000
Tobacco	5,616,000	5,281,000	3,887,000
Metals	28,264,000	23,671,000	21,852,000
Chemicals, dye stuffs, and tanning materials	5,769,000	5,603,000	5,484,000
Oils	9,689,000	8,823,000	8,357,000
Raw materials for textile manufactures	65,684,000	61,923,000	71,268,000
Raw materials for sundry industries.	56,667,000	54,967,000	52,226,000
Manufactured articles	91,293,000	89,695,000	87,076,000
Miscellaneous ,,	15,915,000	14,950,000	14,797,000
Parcel post	1,139,000	1,115,000	1,314,000
Total imports	485,076,000	475,632,000	470,379,000
Deduct re-exports	65,020,000	62,939,000	60,655,000
Net imports	420,056,000	412,693,000	409,724,000

II. *Exports of British Products.*

	1899.		1898.
	Value in Trade and Navigation Returns.	Value Calculated at Prices of 1898.	Value in Trade and Navigation Returns.
	£	£	£
Living animals	1,003,000	1,019,000	1,104,000
Articles of food and drink	12,569,000	11,053,000	12,104,000
Raw materials	26,582,000	24,757,000	21,077,000
Yarn of all kinds	16,619,000	16,429,000	17,055,000
Textile fabrics of all kinds	82,835,000	81,701,000	77,453,000
Metals and machinery	59,963,000	51,822,000	51,137,000
Apparel and articles of personal use	9,555,000	9,399,000	9,577,000
Chemicals and chemical and medicinal preparations	8,855,000	7,965,000	8,389,000
All other articles	35,017,000	33,165,000	33,323,000
Parcel post	2,467,000	2,303,000	2,140,000
Total	255,465,000*	239,613,000	233,359,000

* Exclusive of value of British ships built for foreigners, amounting to 9,195,000*l.*, recorded for the first time in the returns for 1899.

Dealing first with the volume of our trade, it is shown in Table 1 that in 1898 the total value of the imports retained for home consumption was 409,724,000*l.*, and that if we had paid for our net imports of last year the same average prices as in 1898, they would have cost us 412,693,000*l.* It follows, therefore, that there was last year an increase in the quantity of our net imports equal to the difference between 412,693,000*l.* and 409.724,000*l.*, which is 2,969,000*l.*, or 0·72 per cent. Then, as to our exports. In 1898 we exported British products to the value of 233,359,000*l.*, while our exports in 1899, if we had obtained for them the same prices as in 1898, would have realised 239,613,000*l.*; and the difference between these two amounts, which works out at an increase of 6,254,000*l.*, or 2·68 per cent., is the measure of the increase in the quantity of our shipments in 1899. Taking imports and exports together, the volume of our foreign trade last year (exclusive of re-exports and of ships sold to foreigners, the value of which was not included in previous returns), shows, as compared with 1898, an increase of 1·43 per cent., the figures being:—

	£
Actual value of net imports and of exports of British products in 1898	643,083,000
Value of net imports and of exports of British products in 1899, calculated at the prices of 1898	652,306,000
Increase in 1899, due to larger quantities....	9,223,000 = 1·43 per cent.

"Next, as to prices. The actual cost of our imports for home consumption last year was 420,056,000*l.*, whereas if we had paid for them the same average prices as in 1898, they would have cost us 412,693,000*l.*. Thus, owing to higher prices, there was an increase in the cost of our imports of 7,363,000*l.*, or 1·78 per cent.; or in other words, the prices of the imports were on the average 1·78 per cent. higher in 1899 than in 1898. And the rise in the prices of our exports was much more marked. Our total exports of British products in 1899 are valued at 255,465,000*l.* If, however, their value had been calculated at the same average prices as in 1898, it would have amounted to 239,613,000*l.*, and there was thus an increase in value due to higher prices of 15,852,000*l.*, or 6·62 per cent. In imports and exports combined, the increase in value, owing to higher prices, amounted to 23,215,000*l.*, or 3·56 per cent., the calculation working out thus:—

	£
Value of net imports and of exports of British products for 1899, calculated at prices of 1898	652,306,000
Actual value in Trade and Navigation Returns..	675,521,000
Increase due to higher prices in 1899	23,215,000 = 3·56 per cent.

"Subjoined is an analysis of the traffic receipts of fifteen of the principal English railways during the past two years:—

(B.)—*Railway Traffic Receipts in* 1898 *and* 1899.

First Half-Year.

[00's omitted.]

	Passengers, Parcels, and Mails.		Merchandise.		Minerals.		Live Stock.	
	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.
	£	£	£	£	£	£	£	£
London and N. Western	2,603,5	2,513,7	2,236,0	2,161,4	1,408,4	1,325,2	93,5	88,6
Great Western	2,248,6	2,141,6	1,322,7	1,224,0	1,377,5	1,117,9	68,3	65,0
Midland	1,559,4	1,510,8	2,085,7	1,959,3	1,476,8	1,370,6	45,9	42,5
North Eastern	1,202,8	1,113,2	1,350,3	1,273,4	1,420,1	1,339,5	55,0	51,2
Lancashire & Yorkshire.	1,034,0	1,001,1	906,3	878,2	566,6	534,1	18,1	18,5
Great Northern	912,3	884,9	859,7	798,9	468,5	429,6	25,2	23,7
,, Eastern	1,222,9	1,165,3	735,5	672,9	272,1	252,8	45,8	43,8
London and S. Western.	1,363,4	1,287,9	428,3	410,8	192,0	171,1	17,2	17,2
South Eastern and Chatham	1,383,6	1,339,4	325,9	291,3	173,6	163,4	8,7	8,7
London, Brighton	1,009,0	960,9	206,5	202,7	162,1	139,4	5,9	5,2
Great Central	334,4	290,1	512,6	488,9	434,3	380,3	11,2	9,1
North Staffordshire	127,8	120,5	132,4	127,9	131,4	128,9	2,0	2,0
Metropolitan	357,6	349,5	28,5	32,3	17,9	14,6	3	3
North London	164,7	162,5	66,0	64,0	22,9	19,9	9	9
Total	15,524,0	14,841,4	11,196,4	10,590,0	8,124,2	7,382,3	398,0	376,3
	+ £682,6		+ £606,4		+ £741,7		+ £21,7	

Second Half-Year.

[00's omitted.]

	Passengers, Parcels, and Mails.		Merchandise.		Minerals.		Live Stock.	
	1899.	1898.	1899.	1898.	1899.	1898.	1899.	1898.
London and N. Western	3,166,8	3,044,6	2,310,5	2,262,3	1,411,2	1,383,4	131,1	126,6
Great Western	2,770,8	2,620,2	1,389,9	1,306,7	1,384,6	1,165,5	75,3	72,2
Midland	1,815,7	1,776,5	2,161,4	2,088,1	1,464,2	1,478,3	47,6	46,0
North Eastern	1,547,4	1,479,9	1,437,8	1,364,5	1,459,3	1,414,9	52,3	53,0
Lancashire & Yorkshire.	1,217,5	1,169,0	934,0	896,4	546,1	544,7	21,0	21,7
Great Northern	1,100,1	1,078,5	895,4	882,8	475,4	456,6	21,9	22,6
,, Eastern	1,623,8	1,540,8	763,1	747,2	275,1	278,9	33,7	34,2
London and S. Western	1,594,0	1,542,5	457,3	448,2	191,0	177,8	22,0	21,6
South Eastern and Chatham	1,671,3	1,627,0	372,3	358,1	180,3	174,4	14,5	11,2
London, Brighton	1,215,9	1,163,2	236,6	229,6	159,0	156,7	5,3	5,6
Great Central	424,3	353,3	517,2	482,1	454,0	411,1	10,7	9,5
North Staffordshire	141,7	139,7	132,3	129,7	132,0	125,0	2,1	2,2
Metropolitan	360,9	341,7	32,0	32,9	19,8	19,6	4	4
North London	167,4	165,3	67,5	67,8	24,5	26,1	1,0	9
Total	18,817,6	18,677,8	11,707,3	11,407,6	8,176,5	7,822,6	438,9	431,5
	+ £139,8		+ £299,7		+ £293,9		+ £7,4	

VI.—*Fires in London and the Metropolitan Fire Brigade in* 1899.

THE following particulars are taken from the Report of the Chief Officer to the Fire Brigade Committee of the London County Council, in continuation of similar notices for former years:—

The report begins with a table giving a comparison of the brigade work since 1866. The figures for the last five years are:—

Number of Fires.

Year.	Serious.	Slight.	Total.
1895	142	3,491	3,633
'96*	122	3,494	3,616
'97	168	3,332	3,500
'98	205	3,380	3,585
'99	216	3,630	3,846
Average for Ten Years.			
1889-98	164	3,009	3,173
'99	216	3,630	3,846

* Since 1896 fires necessitating the getting to work of more than one stand pipe or hydrant for their extinction have been classed as serious.

"These cases of fire entailed the turning out of brigade men and appliances for work in extinguishing fires, and do not include chimney fires and false alarms.

"The number of fires in which life has been endangered is 191; the number in which a loss of life has occurred is 102; observing that in this calculation a life is said to be endangered when the person alluded to left the house by irregular means.

"The number of persons whose lives were endangered is 291. Of these 172 were saved, the remaining 119 lost their lives.

"Of the 119 cases of death from fire, the large majority of these deaths occurred before the fire brigade was even called. In many cases death occurs when the fire in question is exceedingly limited, and the only information the brigade obtains is from the police, perhaps some hours after the occurrence.

"As long as the paraffin lamp remains a dangerous article of household use, and as long as the conditions under which people in London live continue as they are, it is feared that no reduction in these figures can be anticipated.

"Undoubtedly earlier intimation of fire is now received generally, and the local authorities continue to interest themselves in this direction, to the great advantage of the brigade, by painting red the lamp posts near fire alarms, and by otherwise indicating the positions of the fire alarms.

"There are three facts in connection with the brigade work which the editors of the local newspapers, with their enormous influence, might very usefully impress upon their readers—

"That the best method of calling the brigade is to pull the nearest fire alarm, or to telephone.

"That no charge is made for the services of the brigade within the county of London.

"That nobody is authorised to collect money on behalf of the brigade.

"Last year the brigade was called for chimneys on fire in 954 instances, of which 486 were false alarms.

"The false fire-alarms numbered 1,004, of which 268 were maliciously given, but only 7 persons were brought to punishment. In addition, 15 persons who, for malicious or other reasons, broke the covering glass of alarm posts without giving the alarm, were apprehended and dealt with.

"There have been 3 cases in which the water arrangements have not been satisfactory. These have been duly reported.

"During the past year the chief officer has been called upon to report to other committees of the Council upon matters affecting his department. The number of new theatres now being erected within the county of London has caused considerable labour under this head. The actual number of reports (the preparation of which involved, in many cases, several inspections of premises) to committees, other than the Fire Brigade Committee, has been as follows:—

Theatres and Music Halls Committee	918
Building Act Committee....................................	15

"There has been published the first annual report made to the Theatres and Music Halls Committee on the work done by the inspection branch, constituted by resolution of the Council of 8th February, 1899.

"The strength of the brigade is as follows:—

Staff.

952	firemen, including chief officer, second officer, third officer, superintendents, and all ranks.
32	men under instruction.
17	pilots.
136	coachmen.
6	officials engaged on hydrant work.
1	mechanical engineer.
4	storekeepers.
5	clerks.
1	working foreman.
32	mechanics and labourers.

Material and Duties.

62	land fire engine stations, with horses.
4	floating or river stations.
2	sub-stations without horses.
17	permanent street stations.
38	horsed escape duties.
38	hose cart duties.
10	,, and ladder truck duties.
110	hand fire escape duties.
8	steam fire engines on barges.
62	land steam fire engines.
27	six-inch manual fire engines.
4	under six-inch manual fire engines.
7	hose tenders and escapes.
11	,, and ladder trucks.
105	,, carts.
40½	miles of hose.
7	steam tugs.
12	barges.
10	skiffs.
197	hand fire escapes.
3	emergency ladders.
11	long fire ladders.
42	ladder vans.
2	trollies for engines.
6	hose and coal vans.

Material and Duties—Contd.

5 hose and ladder vans.
6 traps for visiting.
3 stores vans.
1 canteen van.
1 waggon for street duties.
4 bicycles.
102 watch boxes.
231 horses.
113 telephone lines between fire stations.
613 fire alarm call points.
22 telephone lines to police stations.
108 telephone lines to public and other buildings.
7 bell-ringing fire alarms to public and other buildings.

"The committee will remember that during the past year I have been allowed to do a large amount of useful work in the direction of advising the city authorities, the heads of government departments and public institutions, as regards the protection for fire of their buildings and the inmates thereof. The only conditions on which these services have been rendered were that neither the Council nor I accepted any responsibility or fee.

"The number of accidents to members of the brigade recorded during 1899 is 169; none of these have been fatal.

"There have been during the year 563 cases (including 56 due to service) of illness, 3 of which resulted in death.

"The progress both in mobilisation and in attack methods is very satisfactory, and my work is considerably facilitated by the intelligent interest shown by officers and men in our improved organisation.

"The total number of officers and men struck off the strength of the brigade during the year is 107."

The following particulars are obtained from the tables appended to the report, viz.: fires classified according to occupations, and arranged in the order of frequency of occurrence; to which are added, for the purpose of comparison, the corresponding figures for the three previous years:—

Number.	Occupations.	Number of Fires in			
		1899.	1898.	1897.	1896.
1	Private houses	1,000	896	900	949
2	Lodgings	769	780	726	801
3	Victuallers	85	70	81	83
4	Commons, roads, and open spaces	84	58	67	70
5	Railways	57	33	16	27
6	Under repair and building	52	44	46	37
7	Offices	51	33	40	42
8	Unoccupied	48	46	39	56
9	Boot and shoe makers	43	33	35	37
10	Oil and colour men	42	61	37	53
11	Restaurants and refreshment rooms	41	39	35	29
12	Drapers	41	28	40	39
13	Printers and publishers	38	45	36	31
14	Builders	35	51	34	48
15	Tailors, clothiers, and outfitters	34	41	41	39
16	Cabinet makers	33	32	29	43

Number.	Occupations.	Number of Fires in			
		1899.	1898.	1897.	1896.
17	Grocers	32	34	38	29
18	Hotels (including club-houses)	31	22	31	30
19	Greengrocers and fruiterers	30	36	38	35
20	Laundries	30	24	27	13
21	Confectioners and pastrycooks	29	48	42	45
22	Provision dealers	29	22	28	25
23	Bakers	28	22	29	26
24	Chandlers	28	31	21	28
25	Coffee houses	27	30	26	35
26	Engineers and machinists	27	20	35	22
27	Fried fish shops	27	18	24	20
28	Tobacconists	26	25	24	24
29	Butchers	26	26	38	18
30	Corn dealers	25	13	16	13
31	Stables	24	23	15	14
32	Waggons on the road	24	15	20	18
33	Contractors	23	21	19	13
34	Chemists	20	18	23	21
35	Milliners and dressmakers	19	11	14	15
36	Furniture makers and dealers	19	15	19	24
37	Hairdressers	18	25	20	28
38	Dairymen	18	19	16	14
39	General dealers	16	17	16	23
40	Coal and coke merchants	15	9	10	14
41	Let out in tenements	14	14	12	7
42	Schools	14	13	13	4
43	Docks	14	7	—	—
44	Booksellers, binders, and stationers	13	12	15	15
45	Farming stock	13	11	5	9
46	Wardrobe dealers	12	11	5	13
47	Fishmongers	11	12	13	20
48	Beershop keepers	11	9	16	24
49	Newsagents	11	9	8	9
50	Ships (steam)	11	9	6	5
51	Churches and chapels	10	15	9	15
52	Carpenters and workers in wood	10	7	11	8
53	Looking glass and picture frame makers	10	11	9	5
54	Electric light works	10	3	—	—
55	Tobacco and cigar manufacturers	10	4	4	4
56	Upholsterers	10	8	10	6
57	Fancy repositories	10	4	2	6
58	Mineral water manufacturers	10	1	2	5
59	Photographers	10	4	5	9
		3,258	2,998	2,936	3,095
	Remainder	588	587	564	521
	Total	3,846	3,585	3,500	3,616

Fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

Causes.	Number of Fires.
1. Unknown and doubtful	1,295
2. Lamps (not gas) and lights thrown down	658
3. Gas in various ways	284
4. Sparks from fires, &c.	273
5. Candles	263
6. Defective or improperly set flues, hearths, stoves, &c.	235
7. Children playing with fire, matches, &c.	204
8. Hot ashes	96
9. Airing linen and drying stoves	87
10. Overheating of flues, ovens, furnaces, boilers, &c	78
11. Boiling over, or upsetting of fat, pitch, &c.	65
12. Mineral oil stoves, explosion or upsetting of	58
13. Foul flues, &c.	47
14. Overheating of portable gas stoves, &c	43
15. Lime slaking by rain and otherwise	20
16. Electric wires, short circuit of	18
17. Vapour of spirit in contact with flame	17
18. Smoking tobacco	16
19. Lucifer matches	15
20. Clothes or goods coming in contact with fire	12
21. Spontaneous ignition	10
22. Fireworks, letting off	8
23. Lighted taper	8
24. Plumbers at work	5
25. Friction of machinery	4
Miscellaneous, varying from 3 to 1	27
Total	3,846

VII.—*English Literature in* 1899.

THE following particulars are taken from the *Publishers' Circular* of the 6th January, 1900, in continuation of a series of similar extracts for previous years :—

"War and rumours of war affected the production of books in 1898, which numbered 410 less than in 1897. The year just closed has also been one of exceptional excitement on the military side. Yet we have to record a slight increase over the figures of the preceding twelve months. New books and new editions together amount in 1899 to 50 more than in 1898, though new books alone show a decline of 37. In fiction there is a noticeable increase in the number of new editions, and the total of reprints is 88 greater than in 1898.

"Our table shows an increase of 102 in essays and monographs, of 23 in poetry, and 32 in books of travel. In the department of art and science there is an increase of 44. In fiction, new and old, there is an increase of 159, the new editions, as stated, being up 92. In law there are fewer new books, but more reprints. Theological, educational, and serial works show nearly the same numbers as last year. Of political and kindred books there are 70 less to chronicle than in 1898, and 177 less than in 1897.

Analytical Table of Books Published in 1899.

Subjects.		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on eac Subject for the Year.	
Theology, sermons, biblical	*	41	33	54	40	49	56	52	16	54	55	71	69	590	
	†	4	10	23	11	13	10	9	2	2	5	5	9	103	693
Educational, classical, and philological	*	61	61	82	73	56	56	81	43	67	70	70	70	790	
	†	13	47	20	15	23	10	14	9	11	14	16	8	200	990
Juvenile works, novels, tales, and other fiction	*	55	102	194	142	120	149	118	91	192	319	272	71	1,825	
	†	25	51	89	53	78	58	65	45	57	82	83	50	736	2,561
Law, jurisprudence, &c.	*	4	3	10	10	7	8	16	2	5	3	17	12	97	
	†	6	13	4	3	7	6	6	1	3	5	4	5	63	160
Political and social economy, trade, and commerce	*	21	25	28	20	24	30	31	31	36	34	44	26	350	
	†	10	10	9	8	14	14	11	9	14	2	6	7	114	464
Arts, science, and illustrated works	*	21	16	38	33	29	45	21	12	21	16	27	27	306	
	†	2	3	4	3	5	5	1	3	3	—	2	2	33	339
Voyages, travels, geographical research	*	3	4	12	13	16	19	13	13	14	23	19	20	169	
	†	—	1	6	—	1	7	3	8	—	2	4	3	35	204
History, biography, &c.	*	31	39	50	49	31	35	44	15	32	59	70	73	528	
	†	10	12	15	9	10	19	13	—	6	14	9	9	126	654
Poetry and the drama	*	28	22	31	20	18	27	22	17	23	25	41	44	317	
	†	5	1	6	5	10	4	3	3	5	2	13	20	77	394
Year-books and serials in volumes	*	38	39	32	19	21	19	27	17	37	42	23	53	367	
	†	—	—	—	—	—	—	—	—	—	—	—	—	—	367
Medicine, surgery, &c.	*	8	7	11	17	8	17	18	10	10	12	15	22	155	
	†	7	11	9	2	7	8	7	5	7	2	5	3	73	228
Belles-Lettres, essays, monographs, &c.	*	5	9	32	19	25	33	21	14	21	28	46	37	290	
	†	1	1	3	3	3	1	2	—	4	8	2	2	30	320
Miscellaneous, including pamphlets, not sermons	*	10	22	47	17	9	14	8	4	13	14	11	18	187	
	†	1	—	—	—	—	1	1	1	—	1	1	—	6	193
		410	542	809	584	584	651	607	371	637	837	876	659		7,567

* New books. † New editions.

"The analytical table is divided into thirteen classes; also new books and new editions.

Divisions.	1898.		1899.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.	535	153	590	103
Educational, classical, and philological	732	189	790	200
Novels, tales, and juvenile works	1,758	644	1,825	736
Law, jurisprudence, &c.	117	46	97	63
Political and social economy, trade, &c.	437	97	350	114
Arts, sciences, and illustrated works	263	32	306	33
Voyages, travels, geographical research	133	39	169	35
History, biography, &c.	618	125	528	126
Poetry and the drama	290	81	317	77
Year-books and serials in volumes	347	—	367	—
Medicine, surgery, &c.	160	36	155	73
Belles-Lettres, essays, monographs, &c.	182	36	290	30
Miscellaneous, including pamphlets, not sermons	436	30	187	6
	6,008	1,508	5,971	1,596
	7,516		7,567	

VIII.—*Notes on Economical and Statistical Works.*

Wages in the United Kingdom in the Nineteenth Century. By Arthur L. Bowley. 144 pp., 8vo. 6*s*. net. Cambridge University Press, 1900.

Members of the Royal Statistical Society have been afforded several opportunities in recent years of making acquaintance with the useful work which Mr. Bowley is doing in connection with wages statistics. The publication of this volume puts students generally in possession of results which have been attained by much diligent research and have not been before available. It does, however, something more than this. It affords a great deal of very valuable guidance to those who may be inclined to take up work in this important field. The ordinary reader who desires merely a roundly stated result will not be likely to enjoy reading this volume. It needs very careful study and close attention to the discussion throughout. Agriculture, building trades, printers, seamen, miners, textile workers, and the iron trades are treated of in the various chapters, and the special difficulties which stand in the way of a satisfactory combination of the records, sometimes very irregular, which have so far been found, are examined carefully. The general nature of the treatment of these records has been explained by the author himself to our Society, so that we need not remark on his method here. The fruitful line of investigation which he has opened up will repay much diligent work by many students, and no one who proposes to work in that department can afford to neglect the volume now issued, and the papers in this *Journal* and elsewhere on the same subject, to which reference is made, and the results of which are quoted as needed in this volume. As a study of methods applicable to the problem, and of the best way to avoid the difficulties connected with it, even more than—one might almost say rather than—as a presentation of results, the value of this book will be recognised. In saying this we do not wish to minimise in any way the importance of the results attained as exhibited in the tables and diagrams which enrich the volume. The bibliography given in one of the appendices is a feature of importance to students.

Dictionary of Political Economy. Edited by R. H. Inglis Palgrave. Vol. iii, N—Z. 752 pp., medium 8vo. 21*s.* net. London: Macmillan and Co., 1899.

The great task which Mr. Palgrave set himself when he undertook the preparation of his Dictionary is now accomplished. He is to be congratulated on its successful completion, while English economic students no longer stand in the position of inferiority in this matter in relation to their French or German brethren, in which the lack of such a publication placed them. The nature of the work precludes any attempt to treat this in the same way as ordinary books. We can only say that the standard of the earlier volumes is fully maintained in this. The present volume, however, is peculiar in that it includes such a number of general articles of exceptional interest. The articles on Adam Smith and Ricardo for example, and the extensive discussion under the head "Political Economy." The Poor Law, too, falls within its range, as do also Railways, Supply, Taxation, Wages, among other subjects of first importance. We observe that the inevitable delay on the preparation of the volume excludes the mention of Imperial Penny Postage from the article on the Post Office, while, on another head, legislation dealing with Rogues and Vagabonds finds only the briefest mention under the head "vagrancy." Such blemishes as these, and any defects in the proportioning of space to the importance of subjects, it would be ungrateful to dwell upon. To have secured a Dictionary of this class is a great matter, and any minor defects are comparatively easily dealt with in later editions. One is struck by the constant appearance of the signature of some who are now dead under the articles in the volume. The late Professor Munro is one noteworthy case of a valuable contributor who did not live to see the work completed; General Walker is another. A memoir of the latter, indeed, appears in the volume, which includes some contributions from his own pen.

The elaborate index is a great assistance to those who would consult the work. Perhaps we might be permitted to suggest for the consideration of the editor, the propriety of including in a future edition an index which would enable the contributions of individual contributors to be readily discovered. How, for example, can one find out what Professor Loria has contributed by any surer process than guess-work?

We conclude this note as we began, by offering our warm congratulations to the editor on the successful completion of his useful, laborious and well conceived work, which places all economic students, and a large section of the community besides these, under a debt of gratitude to him.

The English Income Tax. By Joseph A. Hill, Ph.D. American Economic Association. 157 pp., 8vo. $1. October, 1899.

The series of economic studies which the American Economic Association issue from time to time has included not a few monographs of great interest on this side of the Atlantic as well as in America. The present study of our income tax, "with special reference to administration and method of assessment," is a useful addition to the series. The importance and convenience of the tax, from the fiscal point of view, have recently been once more emphasised in a very practical fashion. This American monograph might well prove a convenient source of information to English readers who may desire to study more closely the arrangements of a tax so comprehensive as to merit the description of a "system or code of taxation." The procedure followed in assessment, and the safeguards against evasion, with reflections on their efficiency, are subjects meriting the attention of citizens. But in addition to a very useful study of principles and of practical detail, the volume contains some interesting *résumés* of the progress of the revenue derived from the tax, and some tabular statements showing this progress in greater detail. Attention is specially directed to the rapid increase in the last twenty years of assessments of revenue derived from foreign sources. Another point emphasised is the comparatively slow growth of assessments from "Trades and Professions" in Schedule D, contrasting sharply with the rapid growth under "Public Companies, &c." The former have, on the whole, hardly advanced since 1875, while the latter have doubled since the same date. The substitution of the company for the private trader is well brought out in this contrast.

The discussion of the subject of evasion, with which the book concludes, leads to the conclusion which has been reached by many students of our income tax, that we succeed in obtaining "as close an approach to a complete assessment as would be made by any other income tax or any other method of assessment."

The Russian Journal of Financial Statistics, 1900. 236 pp., 8vo. St. Petersburg, 1899.

An attempt is being made to supply the English and American public with information on Russian financial matters from official sources. The errors in compiling such information to which foreigners are liable are obvious, even if they do not receive ample illustration in the prefatory articles of this new publication. It is not clear at what intervals subsequent numbers may be expected.

The specimen number contains, in addition to an exposition of blunders made in representing Russian facts in the English or French languages, and a statement of the debt and of the revenue and expenditure of the Empire for 1898, an interesting article on

Russian gold production, showing it to be not progressive—indeed even declining in recent years. Another article, which should be of interest in England just now, deals with the treatment of the traffic in intoxicants in Russia, showing how the apparent results in revenue, consumption, &c., need to be taken if the real influence of reform is to be estimated. A third useful feature is a series of tables showing the profits of Russian joint stock companies in the first half of last year. The list includes 385 companies, with a capital of 692 millions of roubles, and the dividends exceeded 80 millions of roubles. It is to be observed that the list of "joint stock companies founded abroad and permitted to carry on operations in Russia," contains only two names of English companies among its fifty-two items, and only one American. The great majority are Belgian. The spread of information among the English-speaking peoples relating to the industrial and commercial opportunities afforded by Russia is a matter of no small importance. Both for this reason and for the interest of the matter contained in the first number, the new publication has a useful field before it if this is the standard to be maintained.

Industrial Cuba. By Robert P. Porter. 415 pp., 8vo. 15*s.* G. P. Putman's Sons, 1899.

The people of the United States have undertaken a great task in taking charge of the island of Cuba. The nature of the work that needs to be done there, the conditions of the industries on which the prosperity of the people depends, the existing financial, commercial, and administrative organisation of the island, are all treated in this interesting volume by the Special Commissioner sent by the United States Government to study the questions on the spot. A useful and informing book is the result of his inquiries. He has found a good deal of suggestion towards the solution of some of the problems which present themselves in an examination of English methods in Jamaica. The need of extended railway communication is urged, but the construction of good ordinary roads is pointed out as still more urgent. The sanitary work which must be undertaken calls for repeated treatment in different connections in the book, and what will be done under this head will undoubtedly be of the utmost importance for the future of Cuba. The problems of currency, taxation—general and local—and education are discussed with care and moderation. The interdependence of different phases of the problems facing the administration is well shown — the development of industry hampered by difficulties in supply of labour, the supply of labour incapable of adjustment to local needs for want of proper means of communication, &c., &c. One phase only of the book strikes a non-American mind: Cuba is clearly regarded from the point of view of its possibilities of value to the United States. Its products on the whole are non-competing (though the case of sugar presents a serious exception), it has need for the manufactured and other goods which America can supply. These are important matters in deciding other questions. It is very clearly held by the author that the proper solution of the difficulties of the situation is the inclusion of Cuba in the United States. The assertion that the Cubans will be left to make a completely free choice of independence under American protection or independence as a State of the Union, needs repetition to assure one that no pressure will be exercised, but the repetition is in itself not entirely reassuring. The acts of the United States up to the present, however, are, in this regard, quite satisfactory, as the author shows. His contribution to a knowledge of the conditions with which the administration of the island is now face to face should prove helpful. The volume is illustrated by a number of photographs and some maps. The arrangement of this illustrative material seems to have only a vague relation to the letterpress.

Allgemeines Statistisches Archiv. Fünfter Band, II Halbband. Tübingen, 1899.

The current number of this well-known periodical contains several articles of more than ordinary interest. The editor, Dr. Georg von Mayr, contributes a considerable proportion of the number, and his paper on the arrangement of material in scientific statistics will repay study. The near approach of the census period in the principal countries gives rise not merely to special reference to the preparations on foot, but also to a discussion of the utility of electrical apparatus in the preparation of the results which will be yielded by the enumeration schedules. Two articles deal with the various aspects of the results of the industrial census of Germany in 1895. Dr. Goldstein's article shows how the small industrial establishment is yielding in importance to large scale industry, in a comparison of the distribution in various industries of large and small establishments. Dr. Georg von Mayr shows, among other things in his article, how the population of the larger towns is growing faster than that of the smaller, and of these again than of the rural districts. Another curious point is that the proportion of women to men has fallen more in the towns of middle and large size than elsewhere, though the great towns still maintain the greatest excess of women. A similar fact is brought out in reference to the percentage of the population belonging to the class of domestics. This, though greatest in the great towns, has fallen fastest there since the last census of occupations. These are but a few of the results of a very thorough examination of the material of the census. Attention may also be directed to an admirable article by Herr Karl Kögler, the Director of the Accident Insurance Institute for Lower Austria, dealing with the results of the Austrian experience of "Compensation for Accidents to Workmen" in the years 1890-96.

Statistical and Economical Articles in Recent Periodicals.

UNITED KINGDOM—

Economic Journal. December, 1899.—Some Remarks on Consumption: *H. Higgs.* Old Age Pensions: *C. S. Loch.* The Distribution of Revenue between the Central Government

UNITED KINGDOM—*Contd.*

Economic Journal. December, 1899—*Contd.*
and Local Authorities: *C. F. Bastable.* The Problem of our National Savings: *An English Savings Bank Manager.* The Course of Average Wages between 1790 and 1860: *G. H. Wood.* The Regulation of Wages by Lists in the Spinning Industry: *S. J. Chapman.* Notes towards the History of London Wages: *B. L. Hutchins.* Labourers' Dwellings: *Lettice Ilbert.* Domestic Servants in Germany: *Henriette Jastrou.* The Over-production of Currants: *T. A. Burlimi.*

Economic Review. January, 1900.—The Agriculture of a French Canton: *Yan' Keravic.* The Place of Money in Economics: *W. W. Carlile.* How Berlin provides for its Destitute Children: *Edith Sellers.* Indiscriminate Indoor Relief: *J. T. Dodd.*

Manchester Statistical Society, Transactions, 1898-99—Feeble-minded Children: *Mary Dendy.* The Housing Problem: *B. F. C. Costello.* Some Old Trade Records Re-examined: A Study in Price Movements during the Present Century: *A. W. Flux.* On the Statistics of some Lancashire Industries: *Dr. J. Niven.* The Economic Results of the Ship Canal on Manchester and the surrounding districts: *A. W. Fletcher.*

UNITED STATES—

Annals of the American Academy of Political and Social Science. January, 1900—The South African Conflict—its Legal and Political aspects: *F. A. Cleveland.* Railway Discriminations and Industrial Combinations: *C. A. Prouty.* The Rise of the National Board of Health: *W. H. Allen.*

American Economic Association. Economic Studies, December, 1899—The Effects of Recent Changes in Monetary Standards upon the Distribution of Wealth: *F. S. Kinder.*

American Statistical Association Publications. September, 1899—Notes on Map Making and Graphic Representation: *W. Z. Ripley.* The Portuguese Population in the United States: *F. L. Hoffman.* Report on Uniform Financial School Reports. Memorandum on Efforts to determine the Area and Population of the Philippine Islands: *W. F. Willcox.* Notes concerning the Rates of Interest in California: *C. C. Plehn.*

Journal of Political Economy. December, 1899—The Chicago Trust Conference: *H. R. Hatfield.* Trusts from an Economic Standpoint: *W. M. Coleman.* The Foreign Trade of the United States from 1820 to 1840: *W. P. Sterns.* The Races of Europe: *C. C. Closson.* An Error in the Use of Statistics of Population: *H. L. Bliss.* An Error in Austrian Wages Statistics: *Katharine Davis.*

Political Science Quarterly. December, 1899—The Evolution of Modern Banking: *C. A. Conant.* Need of Inter-Oceanic Communication: *L. M. Keasbey.* The Sugar Situation in the Tropics: *J. F. Crowell.* The Barrier between England and Democracy: *E. Porritt.*

UNITED STATES—*Contd.*

Quarterly Journal of Economics. February, 1900—The Iron Industry in the United States.—I. A Survey of Growth: *F. W. Taussig.* Ethnic Factors and the Movement of Population: *J. Cummings.* The New York Canals: *J. A. Fairlie.* The Pre-conceptions of Economic Science. III. *T. Veblen.* The New German Bank Law: *S. Sherwood.* British Taxation—Imperial and Local: *J. King.*

Yale Review. February, 1900—Influence of the Trust in the Development of Undertaking Genius: *S. Sherwood.* Recent Works on Russian Economic Conditions: *V. G. Simkhovitch.* Rural Sanitation in England: *W. H. Allen.* Experience of the Dutch with Tropical Labor. I. The Culture System: *C. Day.*

FRANCE—

Annales des Sciences Politiques—

January, 1900—La crise sud-africaine: *P. Hamelle.* L'assurance-accident et la loi du 9 avril, 1898: *A. Wilhelm.* Les câbles sous-marins anglais: *L. S.* L'action économique des puissances en Chine: *M. de Coppet.*

Journal de la Société de Statistique de Paris—

December—L'enquête de 1898 sur les valeurs comprises dans les donations et les successions, classées par nature de biens: *L. Salefranque (concluded).* Les associations co-opératives allemandes à la fin du XIX^{e} siècle: *F. de Flaix.* Chronique des questions ouvrières et des assurances sur la vie: *M. Bellom.*

January—Comparaison du travail à la main et du travail à la machine: *E. Levasseur.* Aptitude de la France à fournir des colons: *A. Dumont (continued in February).* L'Institut international de statistique à Christiania (Septembre, 1899): *A. Neymarck.*

February—Note relative au mouvement de la population en 1898: *V. Turquan.* Notice nécrologique sur Émile Yvernès: *E. Fléchey.* La philosophie de la statistique des faillites: *C. M. Limousin.*

Journal des Économistes—

December—Le critérium du progrès: *Y. Guyot.* Les compagnies de colonisation: *L. Vigouroux.* Qualités monétaires des valeurs mobilières: *R. G. Lévy.* La Situation économique et financière de la Suisse: *D. B.* L'Émigration aux États-Unis: *G. François.*

January—Le marché financier en 1899: *A. Raffalovich.* La loi de la distribution: *M. Rouxel.* Les universités populaires: *H. L. Vigouroux.* Encore quelques mots sur la balance du commerce: *F. Passy.*

February—Les contradictions du Socialisme: *E. Martineau.* Un projet de "Banque chrétienne" (Genève, 1675): *A. E. Sayous.* Les infiltrations socialistes et l'assurance obligatoire des marins: *D. Bellet.*

FRANCE—*Contd.*

La Réforme Sociale. Nos.—

92—Une nouvelle proposition de loi belge sur la protection de la petite propriété: *H. C. de Wiart.* L'État actuel de la population en France: *F. de Flaix.*

93—La situation agricole d'un Canton du Pas-de-Calais: *Yan' Keravic.* Les Boers et leur état social: *J. Leclercq.*

94—La France à Madagascar: *Général Gallieni.* L'Émigration, remède au malaise social: *R. P. Piolet.* Les sociétés communistes et le fondement religieux: *F. Sagot.*

95—Les réformes de l'enseignement secondaire et l'essor économique du pays: *G. Blondel.* Le corps de métier au xiii^e siècle: *E. Levasseur* (*continued No.* 96).

96—La prévoyance maritime d'État et l'initiative privée: *G. Salaun.*

97—L'enseignement secondaire et les intérêts sociaux: *M. Boudhors.* La protection de l'enfance et la criminalité aux Congrès de Budapest: *Charlotte de Geöcze.* Le percement du Simplon.—Les travaux et les grèves récentes: *J. Michel.*

Revue d'Économie Politique—

December—Les Trusts américains: *C. Favre.* Les conditions et les fonctions d'une circulation fiduciaire: *A. E. Sayous.*

January—Les Associations co-opératives de production en France: *C. Gide.* Les manufactures au milieu du xviii^e siècle: *G. Martin.* Travail intellectuel et travail manuel: *L. L. Vauthier.*

February—Les publications économiques russes en 1897: *W. de Dehn.* Évaluation de la fortune privée en France: *V. Turquan.* Les populations rurales en Allemagne: *M. Hertz.*

GERMANY—

Jahrbücher für Nationalökonomie und Statistik—

December—Die agrarische Entwickelung Englands: *K. Mamroth.* Die wirtschaftliche Gesetzgebung der schweizerischen Eidgenossenschaft im Jahr 1898: *F. Wissowa.* Die wirtschaftliche Gesetzgebung Oesterreich-Ungarns im Jahre 1898: *F. Wissowa.* Die Idar-Obersteiner Achatindustrie: *C. Schlenther* (*concluded*).

January—Zur Geschichte des Grundeigentums: *F. Rachfahl* (*concluded in February*). Beiträge zur vergleichenden Finanzstatistik europäischer Grossstaten im Jahre 1898: *M. v. Heckel.* Einiges über die Einnahmequellen der Städte des Regierungsbezirks Cassel: *C. Strauss.* Die amerikanische Theesteuer, 1767-73: *E. v. Maack.* Die Reform der Krankenversicherung: *H. Dronke.*

February—Der Schutz der Arbeitswilligen: *H. Flesch.* Die kantonalen Arbeiterinnenschutzgesetze in der Schweiz: *H. Hofmann.* Die Zwischenverkehrsstatistik in Oesterreich-Ungarn: *V. Mataja.* Die verheirateten Männer unter 20 Jahren in der deutschen Berufszählung von 1895: *F. Prinzing.*

GERMANY—*Contd.*

Zeitschrift für Socialwissenschaft—

December—Der Notstand in Russland: *A. Zimmermann.* Die Schweizer kantonalen Arbeiterinnen-Schutzgesetze, ihr Vollzug und ihre Erfolge: *F. Schuler.*

January—Ueber bevorstehende Aenderungen in der allgemeinen Entwicklung der Industrie: *G. Lunge.* Bemerkungen über Verhältnisse der Landwirtschaft im zwanzigsten Jahrhundert: *J. Wolf.* Jugendliches Verbrechertum und seine Bekämpfung: *W. Rein.*

February—Das Kultur-problem. I: *A. Vierkandt.* Die sociale Lage der Witwe in Deutschland. I: *F. Prinzing.* Zur Geschichte und Statistik des Fleischkonsums: *Prof. Huckert.*

Zeitschrift für die gesamte Staatswissenschaft, 1900—

Heft 1—Die Bierbereitung vor dem deutschen Reichstage: *E. Trautvetter.* Untersuchungen zur Geschichte des römischen Bergbaus: *C. Neuburg (continued in next No.).* Zur Beseitigung der kommunalen Grund- und Gebäudesteuer: *F. Pabst.* Grundeigentum, Flächensteuer, Korinthennaturalsteuer und Korinthenbank in Griechenland: *C. D. Carusso.*

Heft 2—Die Steuerreform im Grossherzogtum Baden: *H. Buchenberger.* Zur sozialwissenschaftlichen Theorie des Krieges. I: *A. Schäffle.*

AUSTRIA—

Statistische Monatschrift. November — December. Die VII Session des Internationalen statistischen Instituts in Christiania, 1899: *H. Rauchberg.* Die Hagelhäufigkeit in Oesterreich während der Jahre 1872-96: *K. Kraft.* Das landwirtschaftliche Genossenschaftswesen in Deutschland: *W. Schiff.*

January — February. Ernte-Ergebnisse der wichtigsten Körnerfrüchte im Jahre 1899. Die Legitimationen unehelicher Kinder nach dem Berufe und der Berufsstellung der Eltern in Oesterreich: *K. Seutemann.* Die überseeische österreichische Wanderung in den Jahren 1896-98: *Dr. Buzek.* Der auswärtige Handel der österreichisch-ungarischen Monarchie im Jahre 1899: *R. Krickl.* Die Feuer- und Hagelschäden Osterreichs und deren Entschädigung durch Versicherung in den Jahren 1894, 1895, und 1896: *K. Kraft.*

Sociale Rundschau. January—February, 1900, *Nos.* 1 *und* 2. Arbeitsmarkt. Arbeitsvermittlung. Lohnhöhe und Arbeitszeit. Arbeitseinstellungen und Aussperrungen. Arbeitsstreitigkeiten. Socialpolitik. Sociale Gesetzgebung und Verwaltung. Arbeitsstatistische Ämter. Bücherschau. Anhang.

ITALY—

Giornale degli Economisti, 1900—

January—L' origine del Baratto: a proposito di un nuovo studio del cognetti: *M. Pantaleoni (continued in February).* Le Riserve patrimoniali delle Banche: *G. Crivellari.* A

ITALY—*Contd.*

Giornale degli Economisti, 1900—*Contd.*

proposito della legge sugli Zuccheri: *R. Cavalieri.* Intorno ad alcune opinioni del Bortkewitsch in Materia di Statistica teoretica: *A. Loria.*

February—La posizione di Francesco Ferrara fra gli economisti: *E. Sella.* Il lavoro a mano e il lavoro a macchina: *A. Bertolini.*

March—Sunto di alcuni capitoli di un nuovo trattato di Economia pura del Prof. Pareto: *V. Pareto.* Che cosa è la Mafia: *G. Mosca.* I premii alla Marina Mercantile: *E. Giretti.*

Rivista Italiana di Sociologia—

September—October—Gli esordi dell' agricoltura: *G. Salvioli.* La teoria della proprietà e della famiglia: *L. Winiarski.* Le rivalità nazionali nella Turchia d' Europa: *E. Catellani.* Gli Italiani all' estero: *G. Lerda.*

November—December—Degli indirizzi oggettivo e soggettivo in economia politica: *V. Tangorra.* Marxismo ed economia pura: *B. Croce.* Sull' origine dei comuni rurali: *E. Besta.*

RUSSIA—

Bulletin Russe de Statistique Financière. July—September, 1899—Les Budgets russes 1887-98.—Recettes et Dépenses ordinaires.—Exposé officiel de la situation monétaire et du marché financier. La Dette publique.—Ses éléments classés d'après leur taux nominal. La Taxe de 5% en 1900 sur le revenu des Valeurs mobilières. Les Caisses d'épargne.—Soldes créditeurs des déposants de chaque Province. Liste de toutes les sociétés russes par actions exploitant le Sucre, les boissons alcooliques, le tabac et les allumettes. Conversions et remboursements en bloc effectués depuis 1887. La Dette hypothécaire.—Progression de l'endettement du sol de 1867-99, et l'endettement de la propriété urbaine. Production de la Russie du fonte, fer et acier. Le monopole des spiritueux.

SWITZERLAND—

Journal de Statistique Suisse. Band 1, *Lief* 1—Die Organisation des Bodenkredits in der Schweiz: *H. Näf.* Über die gute Erhaltung der Civilstandsregister in der Schweiz: *J. Durrer.* Ein automatischer Registrierapparat: *C. Borel.* Die Staats- und Gemeindesteuern im Kanton Solothurn: *H. Näf.* Beiträge zur Industriestatistik des Kantons Solothurn.

IX.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th March*, 1900, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From Austria-Hungary, United States, and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Dresden, Hanover, Bucharest, Madrid, Montevideo, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

Egypt—Bulletins et Mémoires de l'Institut Égyptien.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue Géographique internationale. Revue de Statistique. Société de Statistique de Paris, Journal.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia.

Spain—Sociedad Geografica de Madrid, Boletin y Revista.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals and Bulletin. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c. Sound Currency Committee, Leaflets.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

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Jay (*E. A. Hastings*). A Glimpse of the Tropics, or four months' cruising in the West Indies. 284 pp. Maps and plates, 8vo. 1900	The Author
Kearsley (*G.*).— Tax Tables for 1800-04. 24mo. 1800-04 New and Improved Tax Tables for 1820. 16mo. 1820	The War Office
Kebbel (*T. E.*). The Agricultural Labourer, a short summary of his position. New edition. xvi + 271 pp., 8vo. 1893	Purchased
Martineau (*Harriet*). Endowed Schools of Ireland. 79 pp., 8vo. 1859	The War Office
Mathieson & Sons (*Fredc. C.*)— Mathieson's Record. 1900 issue Mathieson's Monthly Mining Handbook. Mid. Jan., 1900 Monthly Traffic Tables. January, 1900 American Traffic Tables. Jan.—June, 1900	Messrs. Mathieson & Sons
Perthes (*Justus*). Alldeutscher Atlas . . . mit Begleitworten. Statistik der Deutschen und der Reichsbewohner. Fol. 1900	Justus Perthes, Gotha
Pope (*Charles*). Yearly Journal of Trade, 1854-55. 24th edit. Map, 8vo. 1854	The War Office
Porter (*Robert P.*)— Industrial Cuba . . . xi + 428 pp., plates, &c., 8vo. New York. 1899 Other People's Money: being a story of municipal speculation and its consequences. 16 pp., sm. 8vo. New York. 1900 Vested Wrongs . . . 35 pp., 8vo. New York. 1900	The Author
Richardson (*Sir Benjamin W.*). Biological Experimentation, its function and limits . . . 170 pp., 8vo. 1896	The Leigh - Browne Trust
Richardson (*J. H.*)— Assessment of Life Risks where there is a predisposition to Phthisis or Cancer. 20 pp., 8vo. Wellington, N.Z. 1899 State Life Insurance in New Zealand. 19 pp., 8vo. Wellington, N.Z. 1899	The Author
Roberts (*Henry*). The Dwellings of the Labouring Classes . . . 3rd edit. La. 8vo., plans, &c. 1853	The War Office
Ross (*C. Edmondstone*). Useful Tables based on a unit decimal system, for simplifying the calculation in any currency of salary or wages, &c. . . , 24 pp., 4to. Calcutta. 1897	The Author
Rusher (*E. A.*). The Bonus earning power of Life Offices. 28 pp., 8vo. 1899	"
Sachs (*Isidore*). L'Italie, ses finances et son developpement economique depuis l'unification du royaume, 1859-84. xvi + 1166 pp., map, 8vo. Paris. 1885	Purchased
Salandra (*Antonio*). La Riforma agraria. Appendice a una discussione parlamentare. 28 pp., 8vo. Roma. 1900	The Author
Sargant (*Charles Henry*). Urban rating, being an inquiry into the incidence of local taxation in towns, with special reference to current proposals for change. 8vo. 1890	Purchased

X.—PERIODICAL RETURNS.

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1899.

BIRTHS and DEATHS—To 31st December, 1899.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* 1899-93, *and in the* Quarters *of those Years.*

Calendar Years, 1899-93:—*Numbers.*

Years.........	'99.	'98.	'97.	'96.	'95.	'94.	'93.
Marriages No.	—	254,955	249,145	242,764	228,204	226,449	218,689
Births........ ,,	928,640	922,873	921,693	915,331	922,291	890,289	914,572
Deaths .... ,,	581,824	552,040	541,487	526,727	568,997	498,827	569,958

Quarters *of each Calendar Year,* 1899-93.

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	'99.	'98.	'97.	'96.	'95.	'94.	'93.
March........ No.	44,456	45,079	44,708	43,266	39,627	47,809	40,243
June .... ,,	72,245	69,960	68,844	65,938	60,665	53,509	58,928
September ,,	71,929	66,393	65,927	65,057	61,018	60,062	58,539
December ,,	—	73,523	69,666	68,503	66,864	65,069	60,979

(II.) Births:—*Numbers.*

Qrs. ended last day of	'99.	'98.	'97.	'96.	'95.	'94.	'93.
March........ No.	231,511	232,145	235,282	222,672	239,615	228,862	231,133
June .... ,,	239,295	232,343	226,348	231,002	233,276	220,955	235,334
September ,,	231,593	234,665	234,452	228,558	232,410	215,851	229,396
December ,,	226,241	223,720	225,611	233,099	216,990	224,621	218,709

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	'99.	'98.	'97.	'96.	'95.	'94.	'93.
March........ No.	147,697	151,014	143,323	136,713	170,102	147,964	144,291
June .... ,,	131,516	127,033	126,318	124,939	130,399	118,651	133,064
September ,,	153,621	141,540	139,079	126,550	133,847	107,441	143,555
December ,,	148,990	132,453	132,767	138,525	134,649	124,771	149,048

Annual Rates of MARRIAGES, BIRTHS, *and* DEATHS, *per* 1,000 PERSONS LIVING *in the Years* 1899-93, *and in the* QUARTERS *of those Years.*

Calendar YEARS, 1899-93 :—*General Ratios.*

YEARS	'99.	Mean '89-98.	'98.	'97.	'96.	'95.	'94.	'93.
Estmtd. Popln. of England and Wales *in thousands* in middle of each Year	31,743,	—	31,397,	31,055,	30,717,	30,383,	30,052,	29,725,
Persons Married	—	15·4	16·2	16·0	15·8	15·0	15·1	14·7
Births	29·3	30·3	29·4	29·7	29·7	30·4	29·6	30·8
Deaths	18·3	18·4	17·6	17·4	17·1	18·7	16·6	19·2

QUARTERS *of each Calendar Year,* 1899-93.

(I.) PERSONS MARRIED :—*Ratio per* 1,000.

Qrs. ended last day of	'99.	Mean '89-98	'98.	'97.	'96.	'95.	'94.	'93.
March	11·4	11·8	11·6	11·7	11·3	10·6	12·9	11·0
June	18·3	16·2	17·9	17·8	17·2	16·0	14·3	15·9
September	18·0	16·0	16·8	16·8	16·8	15·9	15·9	15·6
December	—	17·7	18·6	17·8	17·7	17·5	17·2	16·3

(II.) BIRTHS :—*Ratio per* 1,000.

Qrs. ended last day of	'99.	Mean '89-98.	'98.	'97.	'96.	'95.	'94.	'93.
March	29·6	30·9	30·0	30·7	29·1	32·0	30·9	31·5
June	30·2	30·9	29·7	29·2	30·2	30·8	29·5	31·7
September	28·9	30·1	29·7	30·0	29·5	30·3	28·5	30·7
December	28·3	29·2	28·3	28·8	30·1	28·3	29·6	29·2

(III.) DEATHS :—*Ratio per* 1,000.

Qrs. ended last day of	'99.	Mean '89-98.	'98.	'97.	'96.	'95.	'94.	'93.
March	18·9	20·9	19·5	18·7	17·9	22·7	20·0	19·7
June	16·6	17·7	16·2	16·3	16·3	17·2	15·8	18·0
September	19·2	16·9	17·9	17·8	16·3	17·5	14·2	19·2
December	18·6	18·1	16·7	17·0	17·9	17·6	16·5	19·9

B.—*Special Town Table:*—POPULATION; BIRTH-RATE *and* DEATH-RATE *in each Quarter of* 1899, *in* THIRTY-THREE *Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1899.	Annual Rate to 1,000 Living during the Thirteen Weeks ending							
		1st April, 1899. (1st Quarter.)		1st July, 1899. (2nd Quarter.)		30th Sept., 1899. (3rd Quarter.)		30th Dec., 1899. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Thirty-three towns	11,404,408	30·8	20·6	30·8	17·5	29·8	21·9	29·4	20·8
London*	4,546,752	30·8	20·5	29·6	16·6	28·6	20·6	28·4	21·4
West Ham	300,241	30·4	16·5	30·6	12·9	28·1	20·7	29·6	16·7
Croydon	127,759	25·4	15·4	25·5	13·3	24·1	15·6	25·6	15·8
Brighton	123,226	24·5	17·1	26·3	16·9	24·8	21·8	23·9	20·0
Portsmouth	190,741	27·0	17·6	25·9	16·2	26·4	22·4	25·3	22·6
Plymouth	100,637	27·8	20·6	31·2	19·6	30·5	23·4	29·8	23·3
Bristol	320,911	29·9	18·4	30·0	15·7	27·7	17·5	29·1	21·4
Cardiff	185,826	29·5	14·3	28·9	12·8	28·4	18·5	27·8	16·1
Swansea	103,722	28·0	20·5	29·5	15·5	27·9	17·8	25·5	18·8
Wolverhampton	88,821	35·1	20·0	35·4	22·0	34·0	22·7	36·5	22·6
Birmingham	514,956	34·9	19·8	35·5	18·5	34·0	24·2	32·8	20·9
Norwich	113,266	30·0	18·6	29·1	15·7	29·6	18·3	27·7	16·5
Leicester	213,851	29·1	16·0	31·1	15·4	28·8	20·0	28·7	19·5
Nottingham	239,384	28·0	19·8	30·9	17·4	29·4	23·6	27·5	19·9
Derby	106,401	27·2	17·9	27·7	16·0	29·5	18·3	28·0	15·5
Birkenhead	115,162	28·9	21·5	32·6	16·6	28·6	20·2	29·6	18·4
Liverpool	634,212	35·3	26·4	35·6	22·7	35·9	29·9	35·4	26·6
Bolton	162,221	31·8	21·5	30·3	17·0	28·5	21·7	29·0	19·3
Manchester	543,902	32·4	25·9	34·3	23·6	32·6	27·6	31·1	21·3
Salford	218,244	33·8	22·6	34·3	20·6	33·5	29·1	33·9	23·0
Oldham	150,772	25·2	23·6	24·9	19·9	24·1	19·7	25·1	18·8
Burnley	113,081	26·1	17·1	26·7	17·9	24·9	26·3	23·4	17·2
Blackburn	135,154	28·6	21·4	27·1	17·5	26·9	17·7	25·5	19·9
Preston	117,622	30·8	24·3	30·9	18·5	30·0	23·8	28·5	24·7
Huddersfield	103,464	21·9	17·6	24·5	16·1	22·8	16·4	22·9	14·7
Halifax†	97,721	23·8	21·7	23·2	17·6	24·2	17·1	21·1	16·5
Bradford†	236,241	22·6	19·2	24·1	17·3	24·5	18·6	22·3	18·6
Leeds	423,889	29·7	20·3	32·1	17·1	30·6	20·1	30·0	19·0
Sheffield	361,169	35·2	21·3	34·4	18·2	33·5	27·4	35·1	21·8
Hull	234,270	33·4	17·2	35·4	17·4	34·6	21·1	33·7	21·4
Sunderland	145,613	35·3	22·9	36·5	19·8	36·1	22·4	34·9	20·8
Gateshead	106,552	35·3	19·5	39·4	15·8	35·0	20·5	36·7	19·3
Newcastle	228,625	32·3	20·5	31·4	17·3	31·2	23·9	30·7	20·5

* Including deaths of Londoners in the Metropolitan workhouses, hospitals, and lunatic asylums situated outside Registration London, but excluding deaths of persons not belonging to London occurring in the London Fever Hospital, in the Metropolitan Asylum Board hospitals, and in the Middlesex County Lunatic Asylum, within Registration London. The deaths in the provincial towns have been similarly corrected.

† The recent extension of these towns will not be taken into account until 1900.

C.—*Divisional Table:*—MARRIAGES *in the Year ending 30th September; and* BIRTHS *and* DEATHS *in the Year ending 31st December,* 1899, *as Registered Quarterly.*

1	2	3	4	5	6	7
			MARRIAGES in Quarters ending			
DIVISIONS. (England and Wales.)	AREA in Statute Acres.	Enumerated POPULATION, 1891.	31st December, 1898.	31st March, 1899.	30th June, 1899.	30th September, 1899.
		No.	No.	No.	No.	No.
ENGLD. & WALES....*Totals*	37,317,885	29,002,525	73,523	44,456	72,245	71,929
I. London	74,672	4,211,743	11,761	6,845	11,059	12,308
II. South-Eastern	3,993,270	2,867,078	7,111	3,749	6,708	6,569
III. South Midland	3,246,576	1,863,883	4,431	2,151	4,131	4,470
IV. Eastern	3,126,946	1,575,311	4,328	2,090	3,362	3,453
V. South-Western	5,026,461	1,908,998	4,015	2,487	3,884	3,607
VI. West Midland	4,048,533	3,252,105	8,340	4,848	8,500	8,034
VII. North Midland	3,495,980	1,808,494	4,564	2,648	4,922	4,348
VIII. North-Western	1,947,446	4,664,749	11,280	7,852	12,098	12,528
IX. Yorkshire	3,721,161	3,212,188	8,464	5,321	8,414	8,166
X. Northern	3,527,961	1,863,166	4,749	3,499	5,087	4,553
XI. Monmthsh. & Wales	5,108,879	1,774,810	4,480	2,966	4,080	3,893

8	9	10	11	12	13	14	15	16
	BIRTHS in each Quarter of 1899 ending				DEATHS in each Quarter of 1899 ending			
DIVISIONS. (England and Wales.)	31st March.	30th June.	30th September.	31st December.	31st March.	30th June.	30th September.	31st December.
	No.	No.	No.	No.	No.	No.	No.	No.
ENGLD. & WALES....*Totals*	231,511	239,295	231,593	226,241	147,697	131,516	153,621	148,990
I. London	34,942	33,539	32,460	32,179	22,876	18,427	23,009	23,735
II. South-Eastern	19,974	20,444	20,170	19,594	12,964	11,538	13,905	13,827
III. South Midland	14,276	14,452	14,305	13,883	8,723	7,415	8,732	7,995
IV. Eastern	12,986	13,438	12,865	12,973	7,625	6,739	7,950	7,868
V. South-Western	11,913	12,183	11,657	11,253	8,203	7,582	7,290	8,850
VI. West Midland	27,874	28,929	27,457	26,903	16,567	15,169	16,731	16,764
VII. North Midland	14,390	15,623	14,959	14,592	8,561	7,987	8,994	8,535
VIII. North-Western	38,085	39,502	38,645	37,717	27,361	24,214	28,979	25,578
IX. Yorkshire	25,492	27,025	26,348	25,663	16,176	14,990	17,172	16,099
X. Northern	16,460	18,200	17,527	17,121	9,570	8,978	10,775	9,862
XI. Monmthsh. & Wales	15,119	15,960	15,200	14,363	9,071	8,477	10,084	9,877

D.—*General Meteorological Table,*

[Abstracted from the particulars supplied to the

1839. Months.	Temperature of										Elastic Force of Vapour.		Weight of Vapour in a Cubic Foot of Air.	
	Air.			Evaporation.		Dew Point.		Air—Daily Range.		Water of the Thames				
	Mean.	Diff. from Average of 125 Years.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.		Mean.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.
	°	°	°	°	°	°	°	°	°		In.	In.	Grs.	Gr.
Jan......	42·7	+6·0	+4·4	40·6	+3·8	38·1	+3·4	10·0	+0·6	...	·230	+ ·030	2·6	+0·3
Feb.......	41·9	+3·1	+2·6	39·5	+1·9	36·6	+1·6	12·6	+1·5	...	·217	+ ·011	2·5	+0·1
Mar. ...	40·8	−0·4	−0·9	37·7	−1·5	33·7	−2·2	17·4	+2·6	...	·193	− ·020	2·3	−0·2
Means..	41·8	+2·9	+2·0	39·3	+1·4	36·1	+0·9	13·3	+1·6	...	·213	+ ·007	2·5	+0·1
April ..	46·7	+6·5	−0·3	43·4	−0·4	39·7	−0 5	14·5	−3·9	...	·244	− ·006	2·8	−0·1
May......	50·9	−1·7	−1·8	.46·7	−2·2	42·3	−2·6	18·3	−2·2	...	·270	− ·027	3·1	−0·3
June ...	60·7	+2·3	+1·6	54·6	−0·1	49·2	−1·5	21·7	+0·7	...	·351	− ·021	3·9	−0·1
Means...	52·8	+0·7	−0·2	48·2	−0·9	43·7	−1·5	18·2	−1·8	...	·288	− ·018	3·3	−0·2
July......	65·7	+4·0	+3·6	58·9	+1·3	53·9	0·0	20·7	−0·2	...	·416	+ ·002	4·6	−0·1
Aug. ...	65·7	+4·8	+4·3	59·5	+2·1	54·5	+0·5	21·4	+1·6	...	·425	+ ·008	4·7	0·0
Sept. ..	57·7	+1·1	+0·0	52·8	−1·1	48·3	−2·8	17·7	−0·6	...	·339	− ·039	3·8	−0·5
Means..	63·0	+3·3	+2·8	57·1	+0·8	52·2	−0·8	19·9	−0·3	...	·393	− ·010	4·4	−0·2
Oct......	49·1	−0·4	−0·6	46·9	−0·8	44·6	−0·9	16·0	+1·6	...	·295	− ·011	3·4	−0·4
Nov. ...	48·1	+5·5	+4·5	45·5	+3·8	42·6	+2·9	10·7	−0·6	...	·273	+ ·026	3·1	+0·2
Dec. .	37·0	−2·1	−2·8	35·1	−3·2	32·4	−4·0	9·5	+0·1	...	·184	− ·033	2·2	−0·4
Means..	44·7	+1·0	+0·4	42·5	−0·1	39·9	−0·7	12·1	+0·4	...	·251	− ·006	2·9	−0·2

Note. In reading this table it will be borne in mind that the sign (−) minus signifies

(Compiled from observations

for the Year ended 31*st December*, **1899.**

Registrar-General by JAMES GLAISHER, F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1899. Months.
									Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
Mean.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.	Mean.	Diff. from Average of 58 Years.	Amnt.	Diff. from Average of 84 Years.		At or below 30°.	Between 30° and 40°.	Above 40°.			
		In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°	
84	− 3	29·655	− ·118	547	− 8	2·53	+0·70	411	13	17	1	22·1	47·7	January
83	− 1	29·732	− ·079	549	− 4	1·93	+0·40	265	13	9	6	14·2	44·3	Feb.
78	− 3	29·911	+ ·168	554	+ 4	0·61	−0·95	281	24	4	3	11·0	43·1	March
82	− 2	29·766	− ·010	550	− 3	Sum 5·07	Sum +0·15	Mean 319	Sum 50	Sum 30	Sum 10	Lowest 11·0	Highst 47·7	Means
78	− 1	29·652	− ·097	542	− 1	3·00	+1·33	325	7	16	7	24·9	45·7	April
74	− 3	29·847	+ ·058	541	+ 1	1·65	−0·35	279	10	12	9	24·9	48·7	May
66	− 8	29·890	+ ·076	531	− 1	0·76	−1·18	206	2	10	18	29·8	53·8	June
73	− 4	29·796	+ ·012	538	0	Sum 5·41	Sum −0·20	Mean 270	Sum 19	Sum 38	Sum 34	Lowest 24·9	Highst 53·8	Means
66	− 9	29·900	+ ·107	526	− 2	1·74	−0·80	233	0	1	30	38·3	60·7	July
68	− 9	29·918	+ ·138	526	− 4	0·35	−2·01	229	0	4	27	35·8	59·7	August
71	−10	29·689	− ·120	531	− 2	2·23	−0·09	296	1	11	18	29·1	54·5	Sept.
68	− 9	29·836	+ ·042	528	− 3	Sum 4·32	Sum −2·90	Mean 253	Sum 1	Sum 16	Sum 75	Lowest 29·1	Highst 60·7	Means
85	− 4	29·898	+ ·185	544	+ 4	2·34	−0·44	225	10	17	4	22·0	52·3	October
82	− 9	30·019	+ ·268	547	− 1	3·73	+1·40	290	7	15	8	22·8	49·5	Nov.
86	− 3	29·730	− ·061	555	+ 3	1·47	−0·51	234	21	6	4	15·7	46·0	Dec
84	− 5	29·882	+ ·131	549	+ 2	Sum 7·54	Sum +0·45	Mean 250	Sum 38	Sum 38	Sum 16	Lowest 15·7	Highst 52·3	Means

below the average, and that the sign (+) plus signifies above the average.

made at Greenwich.)

E.—*Comparative Table of* CONSOLS, PROVISIONS, COAL, *and* PAUPERISM *in each* QUARTER *of* 1897-98-99.

Quarters ending	Average Prices of										Pauperism.	
	2¾*l.* per Cent. Consols (for Money) per 100*l.* Stock.*	Discount charged by the Bank of England.*	Wheat per Quarter in England and Wales.†	Meat per Pound at the Metropolitan Meat Market (by the Carcase).‡						Coal (Seaborne) in the London Market per Ton.§	Quarterly Average of the Number of Paupers Relieved on the *Last Day* of each Week.	
				Beef.			Mutton.					
				Inferior Quality.	Second Quality.	First Quality.	Inferior Quality.	Second Quality.	First Quality.		In-door.	Out-door.
	£ *s.* *d.*	£	*s.* *d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*s.* *d.*		
1897												
Mar. 31	112 2 8	3·30	29 7	3⅝	5⅞	6¾	5⅝	7⅝	8⅝	16 9	212,680	530,841
June 30	112 14 8	2·27	27 6	3⅝	6	6⅞	5¾	7⅜	8½	14 3‖	194,514	511,969
Sept. 30	112 5 10	2·29	30 4	3½	6	6⅞	5⅜	7½	8½	15 –	190,185	507,087
Dec. 31	112 8 8	2·93	33 3	3½	5¾	6⅝	5	7⅜	8⅜	16 2	205,999	510,318
1898												
Mar. 31	112 6 6	3·00	35 1	3½	5⅝	6½	5	7⅝	8⅝	16 –	214,014	522,433
June 30	110 19 11	3·57	41 5	3½	5⅜	6¼	4¼	6⅝	7¾	15 9‖	199,901	525,352
Sept. 30	110 14 8	2·55	32 8	3½	5½	6⅜	4⅝	7	8⅛	16 6‖	194,328	531,036
Dec. 31	109 16 11	3·86	27 2	3⅝	5⅝	6⅝	4⅞	7¼	8⅜	16 6‖	207,523	497,638
1899												
Mar. 31	110 17 10	3·28	26 3	3¾	5⅞	6¾	5⅛	7⅜	8½	17 –	214,955	505,147
June 30	109 12 1	3·00	25 1	3⅞	5⅞	6¾	5	7⅝	8⅝	17 –¶	198,929	490,879
Sept. 30	105 14 2	3·43	25 2	3½	5⅞	6⅞	4⅞	7⅜	8½	17 –¶	191,416	481,004
Dec. 31	102 11 8	5·30	26 4	3⅞	5⅞	7⅛	5	7½	8½	20 3	204,657	479,690

* Furnished by the Chief Cashier of the Bank of England.
† As published by the Board of Agriculture.
‡ Furnished by the Board of Agriculture.
§ The prices of coal are furnished by the Mineral Statistics Department of the Home Office.
‖ Sunderland coal only. ¶ Sunderland and Hartlepool coal only.

F.—*Special Average Death-Rate Table:*—ANNUAL RATE *of* MORTALITY *per* 1,000 *in* TOWN *and* COUNTRY DISTRICTS *of* ENGLAND *in each Quarter of the Years* 1897-99.

	Area in Statute Acres.	Population Estimated in the middle of 1899.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years			
				1899.	Mean 89-98.	1898.	1897.
TOWN DISTRICTS. The 100 Towns, together with all Registration Sub-Districts three-fourths of the population of which, as enumerated in 1891, resided within the boundaries of Urban Sanitary Districts*	4,222,051	21,768,699	March ..	19·5	21·3	19·8	18·9
			June	17·1	18·3	16·6	16·6
			Sept.	20·9	18·1	19·3	19·4
			Dec.	19·5	19·1	17·5	17·9
			Year	19·2	19·2	18·3	18·2
COUNTRY DISTRICTS. All the remaining Registration Sub-Districts of England and Wales—not coming within the above definition of Town Districts	33,095,834	9,973,889	Year	16·3	16·8	16·0	15·8
			March ..	17·4	20·0	18·9	18·4
			June ..	15·6	16·5	15·4	15·6
			Sept.	15·6	14·3	14·9	14·3
			Dec.	16·8	16·2	15·0	14·9

* For the years prior to 1894 the figures relate to the 33 great Towns; 67 other large Town districts represented approximately by Registration Districts or Sub-Districts); and all other Registration Sub-Districts, three-fourths of the population of which, as enumerated in 1881, resided within the boundaries of Urban Districts existing in 1886.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1899.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* 1898-95 *inclusive.*

	1899.		1898.		1897.		1896.		1895.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1st Quarter—										
Births	30,909	2·93	31,640	3·02	31,720	3·05	31,033	2·98	31,781	3·10
Deaths	22,866	2·17	20,341	1·94	21,996	2·11	18,510	1·78	26,119	2·55
Marriages	7,248	0·69	7,293	0·70	7,457	0·72	7,046	0·68	6,073	0·59
Mean Temperature	38°·4		40°·2		38°·0		40°·8		33°·1	
2nd Quarter—										
Births	34,976	3·28	34,444	3·25	33,645	3·20	33,745	3·24	33,355	3·22
Deaths	19,451	1·82	20,493	1·92	20,127	1·91	17,613	1·69	19,991	1·93
Marriages	8,615	0·81	8,162	0·77	8,033	0·76	8,004	0·77	7,413	0·72
Mean Temperature	48°·9		49°·2		47°·8		52°·1		50°·6	
3rd Quarter—										
Births	32,931	3·05	32,810	3·06	32,127	3·02	32,052	3·05	31,840	3·04
Deaths	18,730	1·74	18,552	1·73	18,039	1·70	16,062	1·53	17,498	1·67
Marriages	8,363	0·77	7,906	0·74	7,559	0·71	7,493	0·71	7,191	0·69
Mean Temperature	57°·0		56°·6		56°·0		54°·7		56°·8	
4th Quarter—										
Births	31,840	2·95	31,985	2·99	31,331	2·95	32,323	3·07	29,478	2·81
Deaths	18,501	1·71	19,020	1·78	18,899	1·78	18,449	1·75	18,256	1·74
Marriages	8,709	0·81	8,735	0·82	7,917	0·74	7,713	0·73	7,703	0·74
Mean Temperature	43°·3		44°·8		43°·7		40°·4		40°·7	
Year—										
Population	4,281,850		4,249,946		4,218,279		4,186,849		4,155,654	
Births	130,656	3·05	130,879	3·08	128,823	3·05	129,153	3·08	126,454	3·04
Deaths	79,548	1·86	78,406	1·84	79,061	1·87	70,634	1·69	81,864	1·97
Marriages	32,935	0·77	32,096	0·76	30,966	0·72	30,256	0·72	28,380	0·68

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending* 31*st December*, 1899, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.		Illegitimate Births.		Deaths.		Marriages.	
	Number.	Annual Rate per Cent.	Number.	Per Cent. of Total Births.	Number.	Annual Rate per Cent.	Number.	Annual Rate per Cent.
1st Quarter—								
SCOTLAND	30,909	2·93	2,035	6·6	22,866	2·17	7,248	0·69
Principal towns	13,612	3·11	821	6·0	10.351	2·37	3,712	0·85
Large "	4,308	3·04	215	5·0	3,054	2·15	1,048	0·74
Small "	6,532	2·95	427	6·5	4,492	2·03	1,374	0·62
Mainland rural	5,840	2·59	539	9·2	4,370	1·94	969	0·43
Insular "	617	2·07	33	5·3	599	2·01	145	0·49
2nd Quarter—								
SCOTLAND	34,976	3·28	2,179	6·2	19,451	1·82	8,615	0·81
Principal towns	15,117	3·42	941	6·2	8,394	1·90	4,504	1·02
Large "	5,018	3·50	243	4·8	2,562	1·79	1,109	0·77
Small "	7,527	3·36	421	5·6	3,899	1·74	1,578	0·71
Mainland rural	6,731	2·95	536	8·0	4,074	1·79	1,351	0·59
Insular "	583	1·93	38	6·5	522	1·73	73	0·24
3rd Quarter—								
SCOTLAND	32,931	3·05	2,182	6·6	18,730	1·74	8,363	0·77
Principal towns	14,109	3·16	895	6·3	8,543	1·91	4,563	1·02
Large "	4,687	3·23	228	4·9	2,590	1·79	1,163	0·80
Small "	7,109	3·14	435	6·1	3,810	1·68	1,541	0·68
Mainland rural	6,310	2·74	588	9·3	3,407	1·47	1,037	0·45
Insular "	716	2·35	36	5·0	380	1·24	59	0·19
4th Quarter—								
SCOTLAND	31,840	2·95	2,092	6·6	18,501	1·71	8,709	0·81
Principal towns	13,733	3·07	881	6·4	8,574	1·92	4,081	0·91
Large "	4,408	3·04	255	5·8	2,538	1·75	1,083	0·75
Small "	6,983	3·09	405	5·8	3,545	1·57	1,785	0·79
Mainland rural	6,031	2·62	518	8·6	3,450	1·50	1,561	0·68
Insular "	685	2·24	33	4·8	394	1·29	199	0·65

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1891............	4,025,647	1,595,624	515,516	834,063	954,735	125,709
Estimated to the middle of 1899	4,281,850	1,773,301	575,300	897,265	914,848	121,136

III.—*Divisional Table:*—MARRIAGES, BIRTHS, *and* DEATHS *Registered in the Year ended* 31*st December*, 1899.

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland.)	2 Area in Statute Acres.	3 Population, 1891. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
SCOTLAND .... *Totals*	19,639,377	4,025,647	32,935	130,656	79,548
I. Northern	2,261,622	118,237	550	2,487	1,868
II. North-Western........	4,739,876	164,262	765	3,813	2,756
III. North-Eastern	2,429,594	433,199	3,172	13,548	7,441
IV. East Midland	2,790,492	630,098	4,634	17,709	11,228
V. West Midland	2,693,176	313,749	2,094	10,093	5,910
VI. South-Western........	1,462,397	1,563,097	15,255	60,160	35,541
VII. South-Eastern	1,192,524	599,213	5,306	18,204	11,513
VIII. Southern	2,069,696	203,792	1,159	4,642	3,291

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY *of* MARRIAGES, *in the Year ended* 30*th September*, 1899; *and of* BIRTHS *and* DEATHS, *in the Year ended* 31*st December*, 1899.

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.]		Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
	Area in Statute Acres.	Population, 1891. (*Persons.*)						
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,318,	29,003,	262,153	9·0	928,640	32·0	581,824	20·0
Scotland	19,639,	4,026,	32,961	8·2	130,656	32·5	79,548	19·8
Ireland	20,323,	4,705,	22,339	4·7	103,815	22·1	79,772	16·9
GREAT BRITAIN AND IRELAND	77,280,	37,734,	317,453	8·4	1,163,111	30·8	741,144	19·6

Trade of United Kingdom, 1899-98-97.—*Distribution of* **Exports*** *from United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.] 1899. Imports from		1898. Imports from		1897. Imports from	
	1899. Imports from	1899. *Exports to*	1898. Imports from	1898. *Exports to*	1897. Imports from	1897. *Exports to*
I.—Foreign Countries.	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, and Iceland	46,497,	23,637,	45,916,	19,005,	48,087,	16,415,
Central Europe; viz., Germany, Holland, and Belgium	83,328,	45,256.	78,601,	39,947,	76,047,	38,689,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	71,993,	23,665,	69,002,	19,334,	69,910,	19,808,
Southern Europe; viz., Italy, Austrian Empire, Greece, Roumania, Bulgaria, & Malta	8,539,	12,431,	8,683,	10,899,	8,963,	10,474,
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	15,944,	10,410,	13,874,	10,610,	15,548,	10,973,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,520,	1,314,	1,461,	1,131,	1,210,	965,
Western Africa	654,	1,489,	622,	1,248,	553,	1,002,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	547,	2,137,	686,	2,113,	750,	2,403,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	1,726,	3,207,	2,040,	2,667,	2,219,	2,704,
South Sea Islands	313,	273,	147,	199,	189,	186
China and Japan, including **Hong Kong**	5,660,	17,682,	4,558,	12,185,	4,589,	12,925,
United States of America	120,006,	18,104,	126,063,	14,716,	113,042,	20,995
Mexico and Central America	1,101,	2,613,	1,435,	2,301,	1,608,	2,448
Foreign West Indies, Hayti, &c.	148,	1,794,	191,	688,	195,	1,148
South America (Northern), Colombia, Venezuela, and Ecuador	886,	1,565,	948,	1,582,	712,	2,174
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	5,484,	3,063,	5,171,	2,502,	4,645,	2,955
„ **(Atlantic)** Brazil, Uruguay, and Argentine Republic	15,154,	12,952,	12,782,	13,048,	9,830,	11,043
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, Falkland Islands, and French Possessions in North America	210,	36,	199,	36,	157,	51
Total—Foreign Countries	379,710,	181,628,	372,379,	154,211,	358,254,	157,358
II.—British Possessions.						
British India, Ceylon, and Singapore	38,807,	35,449,	36,263,	33,701,	33,144,	30,940
Austral. Cols.—N. So. W., Victoria & Queensld.	20,214,	14,178,	17,306,	13,214,	18,173,	12,754
„ „ So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	13,147,	8,324,	11,544,	7,909,	11,189,	8,556
British North America	20,728,	7,343.	20,755,	6,155,	19,539,	5,476
„ W. Indies with Btsh. Guiana & Honduras	2,173,	2,636,	2,106,	2,638,	2,206,	2,588
Cape and Natal	5,774,	11,395,	6,018,	12,200,	4,948,	13,384
Brt. W. Co. of Af., Ascension and St. Helena	2,430,	2,297,	2,353,	2,024,	2,154,	1,787
Mauritius	208,	352,	101,	239,	95,	285
Channel Islands	1,708,	1,059,	1,553,	1,068,	1,327,	1,092
Total—British Possessions	105,189,	83,033,	97,999,	79,148,	92,775,	76,862
General Total £	484,899,	264,661,	470,379,	233,359,	451,029,	234,220

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* *i.e.*, British and Irish produce and manufactures.

Trade of United Kingdom, for the Years 1898-94.—*Declared Value of the Total Exports of* **Foreign** *and* **Colonial** *Produce and Manufactures to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.] 1898.	1897.	1896.	1895.	1894.
	£	£	£	£	£
I.—Foreign Countries.					
Northern Europe; viz., Russia, Sweden, Norway, Denmark, and Iceland	7,606,	6,477,	6,473,	5,770,	6,771,
Central Europe; viz., Germany, Holland, and Belgium	20,282,	19,372,	20,247,	20,664,	21,923,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	8,166,	6,805,	7,632,	7,398,	7,189,
Southern Europe; viz., Italy, Austrian Empire, Greece, and Malta	1,512,	1,485,	1,159,	1,259,	1,305,
Levant; viz., Turkey, Roumania, Syria and Palestine, and Egypt	675,	638,	432,	404,	554,
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	135,	119,	123,	151,	109,
Western Africa	92,	70,	72,	74,	84,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	27,	23,	20,	13,	20,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	39,	45,	48,	55,	62,
China, including **Hong Kong** and Japan	332,	313,	407,	392,	517,
United States of America	13,818,	16,939,	11,612,	16,120,	11,976,
Mexico and Central America	185,	166,	220,	197,	140,
Foreign West Indies and Hayti	391,	520,	523,	758,	884,
South America (Northern), Colombia, Venezuela, and Ecuador	48,	51,	72,	60,	67,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	273,	256,	254,	290,	238,
„ **(Atlantic)**, Brazil, Uruguay, and Argentine Republic	528,	503,	594,	489,	458,
Other countries (unenumerated)	194,	171,	150,	107,	87,
Total—Foreign Countries	54,303,	53,953,	50,038,	54,201,	52,384,
II.—British Possessions.					
British India, Ceylon, and Singapore	740,	709,	844,	881,	927,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	2,307,	2,385,	2,439,	2,034,	1,943,
British North America	1,386,	989,	940,	1,056,	1,070,
„ W. Indies with Btsh. Guiana & Honduras	389,	410,	427,	412,	475,
Cape and Natal	948,	1,004,	1,064,	882,	663,
Brt. W. Co. of Af., Ascension and St. Helena	289,	236,	225,	203,	232,
Mauritius	22,	18,	21,	26,	26,
Channel Islands	231,	211,	204,	211,	209,
Other possessions	40,	39,	32,	36,	33,
Total—British Possessions	6,352,	6,001,	6,196,	5,741,	5,578,
General Total £	60,655,	59,954,	56,234,	59,942,	57,962,

IMPORTS.—(United Kingdom.)—**For the Years 1899-98-97-96-95.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

[000's omitted.]

FOREIGN ARTICLES IMPORTED.		1899.	1898.	1897.	1896.	1895.
		£	£	£	£	£
RAW MATLS.–*Textile*,&c.	Cotton, Raw ...	27,673,	34,126,	32,195,	36,272,	30,429,
	Wool	26,095,	25,639,	26,752,	26,903,	28,427,
	Silk*....................	18,449,	18,820,	18,787,	18,739,	17,121,
	Flax	2,927,	2,933,	3,203,	3,117,	3,271,
	Hemp and Jute	6,321,	6,110,	5,706,	6,119,	6,446,
	Indigo	986,	891,	1,471,	1,534,	1,393,
		82,451,	88,519,	88,114,	92,684,	87,087,
,, ,, *Various.*	Hides	2,790,	2,906,	2,750,	2,225,	2,804,
	Petroleum	4,573,	3,734,	3,335,	3,732,	3,369,
	Oils (other)........	3,362,	2,967,	2,762,	3,127,	3,294,
	Metals	25,383,	19,563,	19,251,	18,266,	16,549,
	Tallow	2,381,	2,066,	1,870,	2,179,	2,575,
	Timber................	22,882,	21,284,	23,648,	19,404,	15,743,
		61,371,	52,520,	53,616,	48,933,	44,334,
,, ,, *Agrcltl.*	Guano	140,	118,	90,	104,	392,
	Seeds	6,277,	6,013,	5,751,	6,736,	6,279,
		6,417,	6,131,	5,841,	6,840,	6,671,
TROPICAL, &c., PRODUCE.	Tea	10,751,	10,336,	10,405,	10,563,	10,243,
	Coffee and Chic...	3,514,	3,633,	3,629,	3,609,	3,835,
	Sugar & Molasses	18,448,	17,569,	16,197,	18,539,	17,897,
	Tobacco	5,616,	3,887,	4,066,	4,352,	3,354,
	Rice	2,505,	2,005,	2,116,	1,688,	1,982,
	Fruits	9,292,	8,936,	9,122,	7,156,	6,527,
	Wines	5,633,	6,576,	6,434,	5,916,	5,448,
	Spirits	1,880,	1,812,	2,018,	1,889,	1,823,
		57,639,	54,754,	53,987,	53,742,	51,109,
FOOD	Grain and Meal.	58,089,	62,909,	53,580,	52,800,	49,723,
	Provisions	69,393,	64,204,	61,428,	57,162,	55,164,
		127,482,	127,113,	115,008,	109,962,	104,887,
Remainder of Enumerated Articles		95,168,	91,699,	87,421,	79,213,	74,839,
TOTAL ENUMERATED IMPORTS		430,528,	420,736,	403,987,	391,374,	368,927,
Add for UNENUMERATED IMPORTS (say)		54,548,	49,643,	47,042,	50,435,	47,763,
TOTAL IMPORTS		465,076,	470,379,	451,029,	441,809,	416,690,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**For the Years 1899-98-97-96-95.**—*Declared Real Value, at Port of Shipment, of Articles of* British *and* Irish *Produce and Manufactures Exported from the United Kingdom.*

[000's omitted.]

British Produce, &c., Exported.		1899.	1898.	1897.	1896.	1895.
		£	£	£	£	£
Manfrs.—*Textile.*	Cotton Manufactures..	59.502,	55,978,	54,044,	59,310,	54,455,
	,, Yarn	8,055,	8,923,	9,930,	10,045,	9,291,
	Woollen Manufactures	14,785,	13,699,	15,976,	18,269,	19,738,
	,, Yarn	6,723,	6,444,	6,595,	7,223,	7,259,
	Silk Manufactures........	1,510,	1,529,	1,338,	1,423,	1,435,
	,, Yarn	472,	333,	256,	265,	296,
	Linen Manufactures	5,075,	4,393,	4,771,	5,031,	5,351,
	,, Yarn	909,	885,	976,	1,041,	966,
		97,031,	92,184,	93,886,	102,607,	98,791,
,, *Sewed.*	Apparel	4,633,	4,696,	4,980,	5,229,	4,525,
	Haberdy. and Mllnry.	1,537,	1,504,	1,485,	1,518,	1,353,
		6,170,	6,200,	6,465,	6,747,	5,878,
Metals, &c.	Hardware	2,140,	1,987,	2,104,	2,122,	1,856,
	Machinery	19,651,	18,390,	16,256,	17,014,	15,151,
	Iron and Steel	28,093,	22,630,	24,641,	23,802,	19,681,
	Copper and Brass........	4,312,	3,268,	3,019,	3,037,	3,238,
	Lead and Tin	1,223,	940,	862,	921,	877,
	Coals and Culm	23,106,	18,136,	16,655,	15,156,	15,434,
	Ships (New)	9,195,	—	—	—	—
		87,720,	65,351,	63,537,	62,052,	56,237,
Ceramic Manufcts.	Earthenware and Glass	2,947,	2,705,	2,771,	2,860,	2,782,
Indigenous Mnfrs. and Products.	Beer and Ale................	1,663,	1,623,	1,621,	1,592,	1,524,
	Butter	53,	60,	71,	78,	102,
	Cheese	36,	37,	38,	37,	38,
	Candles	413,	329,	333,	357,	386,
	Salt................................	447,	460,	466,	470,	546,
	Spirits	2,096,	1,952,	1,844,	1,798,	1,560,
		4,708,	4,461,	4,373,	4,332,	4,156,
Various Manufcts.	Books, Printed	1,440,	1,337,	1,331,	1,309,	1,228,
	Furniture	583,	613,	629,	596,	517,
	Leather Manufactures	3,330,	3,324,	3,381,	3,474,	3,359,
	Soap	942,	830,	762,	746,	757,
	Plate and Watches	423,	427,	418,	388,	346,
	Stationery	1,016,	987,	948,	959,	860,
		7,734,	7,518,	7,469,	7,472,	7,067,
Remainder of Enumerated Articles		40,589,	38,154,	39,708,	38,312,	36,573,
Unenumerated Articles................................		17,762,	16,786,	16,011,	15,764,	14.406,
Total Exports....................		264,661,	233,359,	234,220,	240,146,	225,890,

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* Years *ended Dec.*, 1899-98-97.

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1899.		1898.		1897.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
FOREIGN COUNTRIES.						
Russia { Northern ports	1,762,062	2,168,804	1,680,159	1,681,719	1,778,863	1,519,785
Russia { Southern „	597,748	353,028	628,037	273,005	629,941	195,936
Sweden	1,799,888	1,993,825	1,734,840	1,667,346	1,776,449	1,606,891
Norway	1,436,020	1,206,016	1,341,370	1,080,225	1,400,877	1,060,627
Denmark..............................	428,611	1,415,672	389,149	1,419,374	400,988	1,400,219
Germany..............................	2,275,660	4,345,074	2,194,774	4,206,576	2,160,116	4,212,299
Holland	2,355,956	2.549,336	2,292,286	2,208,890	2,393,049	2,290,845
Belgium	1,992,273	2,140,896	1,868,499	1,976,253	1,838,348	1,864,973
France..............................	2,814,032	5,131,719	2,647,876	4,498,954	2,745,226	4,480,550
Spain	3,837,259	1,572,384	3,154,223	1,252,380	3,395,975	1,502,275
Portugal	160,145	507,567	141,103	460,657	142,147	455,933
Italy	353,098	3,024,536	224,975	2,617,478	231,239	2,707,500
Austrian territories	95,640	252,098	90,713	255,907	101,346	248,776
Greece..............................	206,156	233,453	195,286	183,572	213,718	193,308
Turkey	227,850	350,413	248,656	365,918	314,016	478,011
Roumania	217,663	164,722	261,808	203,619	235,383	233,858
Egypt	422,489	1,189,853	410,705	1,104,743	402,141	1,083,351
Algeria	239,413	256,282	240,560	250,646	223,508	254,585
United States of America	7,072,528	4,384,145	7,203,874	4,383,256	7,157,664	4,164,031
Mexico, Foreign W. Indies, and Central America	136,921	322,943	115,867	282,214	86,290	423,668
Republic of Colombia	113,597	208,257	112,662	225,858	90,682	160,832
Brazil	125,726	791,027	134,323	809,214	223,461	958,845
Peru..............................	67,183	70,513	75,370	79,007	68,366	52,238
Chili	227,260	364,370	214,179	330,313	211,118	320,202
Uruguay	5,950	206,171	6,421	199,698	14,518	214,160
Argentine Republic	1,249,013	916,233	1,050,843	855,466	780,103	643,391
China	38,077	70,257	11,797	70,041	75,751	74,981
Java..............................	22,069	126,166	43,829	182,582	33,629	195,940
Other countries	648,246	1,250,272	605,689	1,147,873	383,926	753,864
Total, Foreign Countries	30,928,533	37,566,032	29,319,873	34,272,784	29,508,838	33,751,874
BRITISH POSSESSIONS.						
North American Colonies	1,987,725	1,069,480	2,053,925	1,035,430	2,054,828	873,210
E. Indies, including Ceylon, Singapore, and Mauritius	1,273,019	1,500,643	1,307,060	1,412,430	1,119,291	1,502,591
Australia and New Zealand	1,013,448	923,732	775,607	871,041	816,373	875,480
West Indies	69,971	118,985	61,191	126,649	72,498	227,234
Channel Islands..............................	396,071	344,468	437,419	374,129	423,083	364,435
Gibraltar and Malta	5,801	393,808	6,949	458,474	9,809	465,473
Cape of G. Hope and Natal	344,551	703,782	353,172	496,322	415,485	868,415
Other possessions	205,129	410,151	200,608	415,383	215,946	379,564
Total, British Possessions	5,295,715	5,465,049	5,195,931	5,189,858	5,127,313	5,556,402
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months { 1899........	36,224,248	43,031,081	—	—	— .	—
ended { '98	—	—	34,515,804	39,462,642	—	—
December, { '97........	--	—	—	—	34,636,151	39,308,276

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.) —*Declared Real Value of,* IMPORTED AND EXPORTED *for the* Years **1899-98-97.**

[000's omitted.]

Countries.	1899.		1898.		1897.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australasia	5,056,	208,	7,566,	85,	10,604,	59,
S. America, Brazil, Mexico, W. Indies	1,584,	1,054,	2,093,	1,682,	1,929,	1,849,
United States	2,379,	8,822,	49,	9,359,	68,	10,088,
	9,019,	10,084,	9,708,	11,126,	12,601,	11,996,
France	1,841,	726,	4,431,	1,227,	622,	3,018,
Germany, Holland, Belg., and Sweden	4,199,	1,759,	5,851,	2,116,	683,	2,803,
Portugal, Spain, and Gibraltar	275,	32,	420,	25,	544,	34,
Malta and Egypt	140,	46,	825,	76,	310,	69,
China, with Hong Kong and Japan	1,	—	3,786,	23,	743,	13,
West Coast of Africa	70,	16,	89,	9,	148,	26,
British Possessions in South Africa	15,015,	48,	16,769,	34,	13,621,	33,
All other Countries	1,973,	17,	1,844,	42,	1,537,	40,
Totals Imported	32,533,	12,728,	43,723,	14,678,	30,809,	18,032,
Exported to—						
France	1,379,	946,	1,444,	3,672,	1,139,	964,
Germany, Holland, Belg., and Sweden	4,787,	844,	13,893,	1,906,	13,494,	2,442,
Russia	119,	2,983,	55,	2,093,	279,	6,639,
Portugal, Spain, and Gibraltar	1,237,	300,	41,	1,182,	9,	903,
	7,522,	5,073,	15,433,	8,853,	14,921,	10,948,
B. India, China, Hong Kong, and Japan	2,545,	7,743,	6,427,	5,949,	7,787,	7,223,
United States	1,324,	18,	10,942,	8,	1,208,	16,
South Africa	4,225,	93,	—	98,	—	61,
S. America, Brazil, Mexico, W. Indies	4,433,	180,	2,611,	22,	679,	21,
All other Countries	1,487,	848,	1,177,	694,	6,214,	522,
Totals Exported	21,536,	139,55,	36,590,	15,624,	30,809,	18,781,
Excess of imports	10,997,	—	7,133,	—	—	—
„ exports	—	1,227,	—	946,	—	749,

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Weekly for* 1899.

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.	
1899.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Jan. 7	27	–	28	3	17	–
,, 14	27	2	28	2	17	1
,, 21	27	–	27	11	17	1
,, 28	26	7	27	9	17	–
Feb. 4	26	6	27	2	17	–
,, 11	26	8	27	2	17	–
,, 18	26	–	26	10	16	11
,, 25	25	7	26	7	16	11
March 4	25	8	26	7	17	–
,, 11	25	10	26	7	16	11
,, 18	25	10	26	3	16	10
,, 25	25	4	26	8	17	–
April 1	24	11	26	2	16	11
,, 8	24	7	25	1	16	11
,, 15	24	6	25	7	16	10
,, 22	24	8	25	2	17	1
,, 29	25	–	25	10	17	5
May 6	25	3	24	5	17	6
,, 13	25	4	23	11	17	9
,, 20	25	3	23	11	17	10
,, 27	25	2	23	8	17	8
June 3	25	4	24	4	18	1
,, 10	25	6	21	10	18	2
,, 17	25	7	23	1	17	10
,, 24	25	7	26	2	17	11

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.	
1899.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
July 1	25	7	24	2	18	–
,, 8	25	7	21	9	18	1
,, 15	25	5	20	4	17	11
,, 22	25	5	21	10	18	–
,, 29	25	2	22	5	18	2
Aug. 5	24	10	20	9	18	–
,, 12	24	8	22	6	17	9
,, 19	24	7	26	11	17	4
,, 26	24	7	26	5	17	1
Sept. 2	25	–	25	10	16	7
,, 9	25	5	26	5	16	6
,, 16	25	4	27	1	16	2
,, 23	25	4	27	4	16	1
,, 30	25	6	26	11	16	5
Oct. 7	26	–	28	–	16	5
,, 14	27	3	27	9	16	5
,, 21	28	2	27	6	16	10
,, 28	28	1	27	4	16	3
Nov. 4	27	2	27	2	16	7
,, 11	26	7	26	9	16	5
,, 18	26	1	26	4	16	7
,, 25	25	8	26	2	16	7
Dec. 2	25	7	25	10	16	6
,, 9	25	7	25	10	16	5
,, 16	25	4	25	7	16	1
,, 23	25	6	25	10	16	–
,, 30	25	9	25	5	16	2

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES).
Summary of, for 1899, *with those for* 1898 *added for comparison.*

Average for	Per Imperial Quarter, 1899.						Per Imperial Quarter, 1898.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
January	26	11	28	–	17	–	34	9	27	7	17	2
February	26	2	26	11	16	11	35	1	27	9	17	7
March	25	8	26	6	16	11	35	7	28	1	17	9
First quarter	26	3	27	1	16	11	35	1	27	9	17	5
April	24	8	25	6	17	–	36	–	27	9	18	2
May	25	3	23	11	17	8	46	–	26	9	21	–
June	25	6	23	10	18	–	43	7	25	8	20	8
Second quarter	25	1	24	6	17	6	41	5	26	10	19	10
July	25	5	22	1	18	–	37	5	24	3	20	8
August	24	8	24	1	17	6	33	1	26	6	20	1
September	25	3	26	8	16	4	26	5	27	3	17	8
Third quarter	25	2	24	4	17	3	32	8	25	10	19	7
October	27	4	27	7	16	5	26	6	27	9	16	6
November	26	4	26	7	16	6	28	1	28	5	17	2
December	25	6	25	8	16	2	27	2	28	5	17	–
Fourth quarter	26	4	26	6	16	4	27	2	28	2	16	11
THE YEAR	23	1	21	11	14	6	34	0	27	2	18	5

REVENUE OF THE UNITED KINGDOM.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., 1899-98-97-96

[000's omitted.]

QUARTERS, ended 31st Dec.	1899.	1898.	1899.		Corresponding Quarters.	
			Less.	More.	1897.	1896.
	£	£	£	£	£	£
Customs	6,115,*	5,919,*	—	196,	6,110,*	6,151,*
Excise	8,750,*	8,500,*	—	250,	8,020,*	7,950,*
Stamps and estate, &c., duties	5,020,*	4,740,*	—	280,	4,590,*	4,580,*
Taxes (Land Tax and House Duty)	40,	40,	—	—	50,	40,
Post Office	3,430,	3,290,	—	140,	3,120,	3,030,
Telegraph Service	830,	780,	—	50,	740,	715,
	24,185,	23,269,	—	916,	22,630,	22,466,
Property and Income Tax	1,540,	1,530,	—	10,	1,540,	1,460,
	25,725,	24,799,	—	926,	24,170,	23,926,
Crown Lands	210,	190,	—	20,	180,	160,
Interest on Advances	11,	12,	1,	—	—	—
Miscellaneous	517,	578,	61,	—	464,	468,
Totals	26,463,	25,579,	62,	946,	24,814,	24,554,
			NET INCR. £884,			

YEARS, ended 31st Dec.	1899.	1898.	1899.		Corresponding Years.	
			Less.	More.	1897.	1896.
	£	£	£	£	£	£
Customs	21,511,*	20,975,*	—	536,	21,660,*	21,189,*
Excise	30,220,*	29,000,*	—	1,220,	28,060,*	27,240,*
Stamps and estate, &c., duties	20,610,*	18,960,*	—	1,650,	18,110,*	18,550,*
Taxes (Land Tax and House Duty)	2,425,	2,470,	45,	—	2,470,	2,520,
Post Office	13,070,	12,520,	—	550,	12,050,	11,640,
Telegraph Service	3,305,	3,120,	—	185,	2,995,	2,895,
	91,141,	87,045,	45,	4,141,	85,345,	84,034,
Property and Income Tax	18,310,	17,490,	—	820,	16,880,	16,300,
	109,451,	104,535,	45,	4,961,	102,225,	100,334,
Crown Lands	450,	425,	—	25,	435,	415,
Interest on Advances	783,	711,	—	72,	697,	710,
Miscellaneous	2,032,	1,770.	—	262,	1,993,	1,799,
Totals	112,716,	107,441,	45,	5,320,	105,350,	103,258,
			NET INCR. £5,275,			

* Exclusive of transfers to local taxation account.

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND *and* WALES *on Saturday in each Week during the Year* 1899; *and in* SCOTLAND *and* IRELAND, *at the Dates, as under.*

[0,000's omitted.]

ENGLAND AND WALES.					SCOTLAND.				IRELAND.		
DATES. *Saturday.*	*London:* Cleared in each Week on the preceding *Wednesday.*	Private Banks. (Fixed Issues, Dec., 1,33).	Joint Stock Banks. (Fixed Issues, Dec., 1,63).	TOTAL. (Fixed Issues, Dec., 2,96).	Average for Four Weeks ending	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, Dec., 2,68).	£5 and upwards	Under £5.	TOTAL (Fixed Issues, Dec., 2,35).
1899.	£	£	£	£	1899.	£	£	£	£	£	£
Jan. 7......	232,99	42	96	1,38							
,, 14......	154,46	42	95	1,37							
,, 21......	199,61	41	93	1,34	Jan. 21...	2,34	5,17	7,51	3,52	2,53	6,05
,, 28......	140,73	40	92	1,32							
Feb. 4......	229,78	40	93	1,33							
,, 11......	148,58	40	92	1,31							
,, 18......	233,12	39	91	1,30	Feb. 18...	2,21	4,95	7,16	3,55	2,46	6,01
,, 25......	152,46	38	90	1,29							
Mar. 4......	231,93	39	92	1,31							
,, 11......	162,76	39	91	1,30							
,, 18......	205,21	39	92	1,31	Mar. 18...	2,19	5,00	7.19	3,58	2,42	6,00
,, 25......	149,40	40	93	1,32							
April 1......	189,40	42	97	1,38							
,, 8......	151.28	43	98	1,41							
,, 15......	173,12	42	98	1,40	April 15...	2,25	5,21	7,46	3,80	2,54	6,34
,, 22......	199,01	42	97	1,39							
,, 29......	147,45	42	98	1,40							
May 6......	216,80	43	99	1,41							
,, 13......	156,41	42	99	1,41	May 13...	2,50	5,53	8,03	3,92	2,58	6,50
,, 20......	216,13	42	99	1,41							
,, 27......	124,33	41	96	1,37							
June 3......	197,72	41	94	1,35							
,, 10......	170,44	40	92	1,33	June 10...	2,74	5,63	8,37	3,67	2,50	6,18
,, 17......	135,49	39	91	1,30							
,, 24......	204,54	39	90	1,29							
July 1......	166,90	40	90	1,30							
,, 8......	253,41	40	90	1,30	July 8...	2,47	5,54	8,01	3,53	2,46	5.99
,, 15......	171,73	40	88	1,28							
,, 22......	204,72	39	82	1.21							
,, 29......	150,70	38	82	1,20							
Aug. 5......	206,14	38	83	1,21	Aug. 5...	2,37	5,47	7,85	3,59	2,47	6,07
,, 12......	128,63	37	82	1,19							
,, 19......	184,32	36	80	1,17							
,, 26......	157,48	36	80	1,16							
Sept. 2......	133,30	36	80	1,16	Sept. 2...	2,33	5,42	7,75	3,58	2,52	6,10
,, 9......	190,63	36	81	1,17							
,, 16......	131,54	36	81	1,17							
,, 23......	172,63	36	83	1.19							
,, 30......	135,46	38	86	1,25	,, 30...	2,40	5,55	7.95	3,73	2,68	6,41
Oct. 7......	215.43	41	90	1,32							
,, 14......	162,81	41	91	1,32							
,, 21......	182,40	41	90	1,31							
,, 28......	132,94	40	90	1,31	Oct. 28...	2,35	5,62	7,97	4,18	2,93	7,11
Nov. 4......	192.91	42	92	1,34							
,, 11......	154.36	41	93	1,34							
,, 18......	181.48	41	93	1.34							
,, 25......	162,84	41	93	1,35	Nov. 25...	2,66	5,88	8,54	4,23	2,92	7,15
Dec. 2.....	148,85	41	91	1,32							
,, 9......	221.25	40	89	1.30							
,, 16......	145,77	40	88	1,28							
,, 23......	200,43	40	88	1,29	Dec. 23...	2,57	5,69	8,27	3,98	2,83	6,81
,, 30......	116,22	40	87	1,27							

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
Issue Department.					Collateral Columns.	
Liabilities.		Assets.				
Notes Issued.	Dates. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1899.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cnt.
45,22	Jan. 4	11,02	5.78	28,42	27,75	4
45,80	" 11	11,02	5,78	29,00	27,72	
46,68	" 18	11,02	5.78	29,88	26,67	3½
47,46	" 25	11,02	5,78	30,66	26,46	
47,64	Feb. 1	11,02	5,78	30,84	26,81	3
48,09	" 8	11,02	5,78	31,29	26,48	
48,69	" 15	11,02	5,78	31,89	26,29	
48,74	" 22	11,02	5,78	31,94	26,23	
48,35	Mar. 1	11,02	5,78	31,55	26,78	
47,74	" 8	11,02	5,78	30,94	26,63	
47,68	" 15	11,02	5,78	30,88	26,55	
47,15	" 22	11,02	5,78	30,35	26,64	
45,59	" 29	11,02	5,78	28,79	27,93	
44,74	April 5	11,02	5,78	27,94	27,89	
45,04	" 12	11,02	5,78	28,24	27,66	
45,67	" 19	11,02	5,78	28,87	27,45	
45,94	" 26	11,02	5,78	29,14	27.40	
45,05	May 3	11,02	5,78	28,25	27,85	
45,11	" 10	11,02	5,78	28,31	27,72	
44,90	" 17	11,02	5,78	28,10	27,68	
44,47	" 24	11,02	5,78	27,67	27.49	
44,85	" 31	11,02	5,78	28,05	27.82	
45,06	June 7	11,02	5,78	28,26	27,63	
45,73	" 14	11,02	5,78	28,93	27,35	
46,22	" 21	11,02	5,78	29,42	27,36	
46,40	" 28	11,02	5,78	29,60	28,23	
47,11	July 5	11,02	5,78	30,31	29,10	
47,17	" 12	11,02	5,78	30,37	28,99	3½
47,73	" 19	11,02	5,78	30,93	28,67	
48,06	" 26	11,02	5,78	31,26	28.61	
48,22	Aug. 2	11,02	5,78	31,42	29.23	
48,46	" 9	11,02	5,78	31,66	29,00	
49,19	" 16	11,02	5,78	32,39	28,72	
50,04	" 23	11,02	5,78	33,24	28,26	
50,78	" 30	11,02	5,78	33,98	28,41	
50,94	Sept. 6	11,02	5,78	34,14	28,40	
50,63	" 13	11,02	5,78	33,83	27,94	
50,74	" 20	11,02	5,78	33,94	27,65	
49,60	" 27	11,02	5,78	32.80	29,97	
47,76	Oct. 4	11,02	5,78	30,96	28,84	{Oct. 3 4½ { " 5 5
47,94	" 11	11,02	5,78	31,14	28,44	
47,97	" 18	11,02	5,78	31,17	28,19	
48,79	" 25	11,02	5,78	31,99	28,04	
48,52	Nov. 1	11.02	5,78	31,72	28,61	
47,54	" 8	11,02	5,78	30,74	28,49	
46,91	" 15	11,02	5,78	30,11	28,42	
46,95	" 22	11,02	5,78	30,15	28,30	
46,17	" 29	11,02	5.78	29,37	28,59	6
45,87	Dec. 6	11,02	5,78	29.07	28,65	
44,94	" 13	11,02	5,78	28,14	28,60	
44,64	" 20	11,02	5,78	27,84	28,76	
44,71	" 27	11,02	5,78	27,91	28,29	

—WEEKLY RETURN.

for Wednesday in each Week, during the Year 1899.

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
BANKING DEPARTMENT.										
Liabilities.						Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.	DATES. (Wednesdys.)	Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Government.	Other.	Notes.	Gold and Silver Coin.	
£ Mlns	£ Mlns.	£ Mlns.	£ Mlns	£ Mlns	1899.	£ Mlns.	£ Mlns	£ Mlns.	£ Mlns.	£ Mlns.
14.55	3,28	9.72	39,49	,09	Jan. 4	14.82	32,92	17,47	1,92	67,13
14,55	3,40	7.69	41,51	,14	„ 11	15 19	32,04	18,08	1.98	67,29
14,55	3 43	8,00	41,12	.15	„ 18	13,39	31,76	20,02	2,09	67,25
14,55	3,44	9,35	40,67	,13	„ 25	13,39	31,74	20,99	2,03	68,15
14,55	3,47	9,70	40,71	,13	Feb. 1	13,39	32,21	20,83	2,14	68,56
14.55	3 48	11,28	40,30	,13	„ 8	13,38	32,65	21,60	2.11	69.75
14,55	3,50	13.48	39,15	,12	„ 15	13,37	32.92	22,41	2,11	70,80
14,55	3,51	15,20	38,25	,13	„ 22	13,43	33.58	22,51	2,13	71,65
14,55	3,74	15,86	37,93	,14	Mar. 1	13.90	34.57	21,57	2,19	72,23
14,55	3,75	16,59	35,91	,19	„ 8	13,90	33,77	21.11	2.20	70,98
14,55	3,76	16,80	36,82	,16	„ 15	13,90	34,91	21,12	2,16	72,09
14,55	3,80	17,87	36,57	,15	„ 22	13 99	36,32	20,50	2,13	72.94
14,55	3,82	17,98	41,24	,16	„ 29	13,99	44,09	17,66	2,02	77,75
14,55	3,16	12,74	38,14	,13	April 5	13,35	36.37	16,85	2,15	68,72
14,55	3,14	11,86	38,04	,16	„ 12	13,39	34,87	17,39	2.11	67,76
14 55	3,15	12.42	38,10	,16	„ 19	13,39	34,67	18,22	2.11	68,38
14,55	3,15	12.55	38,18	,16	„ 26	13,39	34,54	18,54	2,14	68,60
14,55	3,15	11,38	38,36	,15	May 3	13,37	34,86	17,20	2.17	67,60
14,55	3,15	11,39	37,79	,13	„ 10	13 37	34,16	17,38	2,09	67.01
14.55	3,16	11,46	37,46	,16	„ 17	13 37	34,10	17,22	2,10	66,79
14,55	3,16	11,64	37,06	.13	„ 24	13,37	34,15	16,98	2,04	66,55
14,55	3,11	11,48	37,76	,08	„ 31	13,37	34,49	17,03	2,09	66,98
14,55	3,12	10,99	37,37	,13	June 7	13 37	33.26	17.43	2.10	66,16
14,55	3,13	11,09	38.16	,16	„ 14	13,37	33.24	18,38	2,10	67,09
14,55	3,14	11,71	37,44	,15	„ 21	13.36	32,71	18.86	2,06	67,00
14,55	3,16	12,13	41,58	,10	„ 28	13,36	37,93	18,17	2,06	71,52
14,55	3,42	8,84	39 54	,13	July 5	13.36	33,11	18 01	2.00	66.48
14,55	3,43	7,93	40,30	,16	„ 12	13.36	32,98	18,18	1,86	66,37
14,55	3,46	8.30	40,42	,16	„ 19	13.09	32.86	19,06	1,89	66,89
14,55	3,47	8,41	39,69	,14	„ 26	13,09	31,81	19,45	1,91	66.27
14,55	3,48	7,27	39,96	,13	Aug. 2	13,09	31,51	18,99	1,79	65,39
14,55	3,49	7,01	40,47	,13	„ 9	13,08	31,25	19,46	1,86	65,66
14,55	3,52	7.05	40,87	,14	„ 16	13 07	30,78	20,47	1,80	66,13
14.55	3,53	7,89	40,15	,12	„ 23	13,07	29.58	21,77	1.80	66,23
14,55	3,47	7.57	40,28	,11	„ 30	13,07	28,79	22,37	1,75	65,99
14,55	3,75	7.39	39,95	,16	Sept. 6	13,07	28,40	22.54	1 81	65.81
14 55	3.76	7,28	39,49	,16	„ 13	13,07	27,70	22,69	1,78	65,24
14.55	3,77	8,27	39 68	,16	„ 20	13,07	28,49	23.09	1,78	66,42
14,55	3,82	8.23	39,74	,16	„ 27	13,07	30,01	21,63	1,79	66,50
14,55	3.14	10.64	41.61	,21	Oct. 4	15,77	33,74	18,92	1,73	70,15
14.55	3,18	7,08	45.20	,16	„ 11	15.84	33,22	19,50	1,62	70,18
14,55	3,18	7,67	44.06	,17	„ 18	15.69	32,43	19.78	1 74	69,63
14,55	3,19	8,07	42,47	,16	„ 25	15,19	30,73	20,75	1.77	68.44
14,55	3,17	7.82	41.14	,17	Nov. 1	15.19	30.07	19,91	1,69	66.85
14.55	3.18	7,17	41,66	,19	„ 8	15,46	30,55	19,05	1,70	66,75
14,55	3,19	8,95	39 66	,20	„ 15	11,84	31,43	18,49	1,79	66.56
14,55	3,20	8,19	38 86	,21	„ 22 .. .	13,34	31,25	18,65	1.77	65.01
14,55	3.21	7.58	39,17	,18	„ 29	13.34	32,01	17,57	1,76	64,69
14,55	3,18	6,36	36,22	,19	Dec. 6	12,06	29,49	17,22	1,73	60,50
14,55	3,19	5,56	36,76	,16	„ 13	12,06	30,15	16,34	1,66	60.22
14,55	3,23	6,08	40,61	,18	„ 20	12 06	35.26	15,88	1,46	64.65
14,55	3,24	7.19	41,41	,17	„ 27	13,06	35,68	16,41	1,44	66,59

FOREIGN EXCHANGES.—*Quotations as under,* LONDON *on Paris, Hamburg, Calcutta;—and New York and Hong Kong, on* LONDON, *for* 1899.

1	2	3	4		5		6	7		8		9
			Calcutta.							Price per Ounce.		
DATES. (Tuesdays and nearest Dates).	London on Paris. 3 m.d.	London on Hamburg 3 m. d.	London on Calcutta. Demand.		Indian Council Bills. Minimum Price per Rupee.*		New York on London. 60 d. s.†	Hong Kong on London. 4 m. d ‡		Gold Bars (Fine).		Standard Silver in Bars.
1899.			*s.*	*d.*	*s.*	*d.*	Per cnt.	*s.*	*d.*	*s.*	*d.*	*d.*
Jan. 3 ...	25·41$\frac{1}{4}$	20·66	1	4	1	4$\frac{3}{32}$	4·81$\frac{7}{8}$	1	11$\frac{7}{16}$	77	10$\frac{1}{2}$	27$\frac{1}{4}$
,, 17 ...	25·41$\frac{1}{4}$	20·65	1	4$\frac{1}{16}$	1	4$\frac{1}{32}$	4·83	1	11$\frac{11}{16}$	77	9$\frac{1}{4}$	27$\frac{5}{8}$
,, 31 ...	25·36$\frac{1}{4}$	20·64	1	4$\frac{1}{16}$	1	4$\frac{3}{32}$	4·83$\frac{3}{4}$	1	11$\frac{5}{8}$	77	9$\frac{1}{2}$	27$\frac{7}{16}$
Feb. 14 ..	25·37$\frac{1}{2}$	20·62	1	4$\frac{1}{16}$	1	4$\frac{1}{32}$	4·84$\frac{1}{4}$	1	11$\frac{5}{8}$	77	9$\frac{1}{4}$	27$\frac{7}{16}$
,, 28 ...	25·37$\frac{1}{2}$	20·62	1	4	1	4	4·84	1	11$\frac{1}{2}$	77	9$\frac{1}{4}$	27$\frac{3}{8}$
Mar. 14 ...	25·40	20·64	1	3$\frac{15}{16}$	1	4	4·83	1	11$\frac{1}{2}$	77	9$\frac{3}{4}$	27$\frac{1}{2}$
,, 28 ...	25·41$\frac{1}{4}$	20·65	1	3$\frac{15}{16}$	1	4	4·84	1	11$\frac{1}{2}$	77	9$\frac{3}{4}$	27$\frac{7}{16}$
Apl. 11	25·43$\frac{3}{4}$	20·66	1	3$\frac{15}{16}$	1	4	4·84$\frac{1}{2}$	1	11$\frac{5}{8}$	77	9$\frac{1}{2}$	27$\frac{3}{8}$
,, 25	25·41$\frac{1}{4}$	20·63	1	3$\frac{7}{8}$	1	4	4·85$\frac{1}{2}$	1	11$\frac{7}{8}$	77	9	27$\frac{9}{16}$
May 9	25·40	20·63	1	4	1	4	4·84$\frac{7}{8}$	1	11$\frac{13}{16}$	77	9	28$\frac{3}{8}$
,, 23 ...	25·40	20·65	1	3$\frac{15}{16}$	1	3$\frac{15}{16}$	4·85$\frac{1}{2}$	1	11$\frac{3}{4}$	77	9	28$\frac{1}{8}$
June 6 ...	25·40	20·65	1	3$\frac{15}{16}$	1	3$\frac{31}{32}$	4·85$\frac{3}{4}$	1	11$\frac{3}{4}$	77	9	27$\frac{11}{16}$
,, 20 ...	25·38$\frac{3}{4}$	20·66	1	3$\frac{15}{16}$	1	4	4·85$\frac{3}{4}$	1	11$\frac{3}{4}$	77	9	27$\frac{3}{4}$
July 4 ...	25·38$\frac{3}{4}$	20·64	1	4	1	4$\frac{1}{32}$	4·85$\frac{1}{4}$	1	11$\frac{3}{4}$	77	9$\frac{1}{4}$	27$\frac{11}{16}$
,, 18 ...	25·45	20·72	1	3$\frac{31}{32}$	1	3$\frac{31}{32}$	4·84$\frac{1}{4}$	1	11$\frac{3}{4}$	77	9$\frac{3}{4}$	27
Aug. 1	25·43$\frac{3}{4}$	20·72	1	3$\frac{15}{16}$	1	3$\frac{15}{16}$	4·83$\frac{1}{8}$	1	11$\frac{3}{4}$	77	9	27$\frac{3}{4}$
,, 15 ...	25·46$\frac{1}{4}$	20·75	1	3$\frac{15}{16}$	1	3$\frac{31}{32}$	4·82$\frac{7}{8}$	1	11$\frac{7}{8}$	77	9	27$\frac{3}{4}$
,, 29 .	25·43$\frac{3}{4}$	20·71	1	3$\frac{7}{8}$	1	3$\frac{31}{32}$	4·83	1	11$\frac{1}{2}$	77	9	27$\frac{3}{8}$
Sept. 12 ..	25·45	20·72	1	3$\frac{15}{16}$	1	4$\frac{1}{16}$	4·82$\frac{5}{8}$	1	11$\frac{9}{16}$	77	9	27$\frac{1}{4}$
,, 26 ..	25·48$\frac{3}{4}$	20·72	1	4	1	4$\frac{3}{32}$	4·84$\frac{7}{8}$	1	11$\frac{7}{16}$	77	9	27$\frac{1}{8}$
Oct. 10 .	25·52$\frac{1}{2}$	20·76	1	4$\frac{1}{8}$	1	4$\frac{1}{8}$	4·82$\frac{3}{4}$	1	11$\frac{1}{4}$	77	9	26$\frac{3}{4}$
,, 24 ...	25·50	20·75	1	4$\frac{1}{16}$	1	4$\frac{3}{32}$	4·83	1	11$\frac{1}{4}$	77	9	26$\frac{5}{8}$
Nov. 7	25·46$\frac{1}{4}$	20·75	1	4$\frac{1}{16}$	1	4$\frac{3}{32}$	4·82$\frac{1}{8}$	1	11$\frac{9}{16}$	77	9$\frac{3}{4}$	26$\frac{13}{16}$
,, 21 .	25·45	20·75	1	4	1	4$\frac{3}{32}$	4·81	1	11$\frac{3}{4}$	77	9$\frac{1}{2}$	27$\frac{1}{16}$
Dec. 5	25·52$\frac{1}{2}$	20·78	1	4	1	4$\frac{1}{16}$	4·81$\frac{1}{2}$	1	11$\frac{13}{16}$	77	9$\frac{1}{2}$	27$\frac{3}{16}$
,, 19 .	25·62$\frac{1}{2}$	20·92	1	4	1	4$\frac{1}{16}$	4·81	1	11$\frac{7}{8}$	77	9	27$\frac{3}{16}$
,, 26 ..	25·67$\frac{1}{2}$	20·92	1	4	1	4$\frac{1}{32}$	4·81$\frac{3}{8}$	1	11$\frac{15}{16}$	77	9	26$\frac{5}{16}$

* Wednesdays following. † Thursdays following. ‡ Fridays following.

Vol. LXIII.] [Part II.

JOURNAL
OF THE ROYAL STATISTICAL SOCIETY.

JUNE, 1900.

The TREATMENT *of* JUVENILE OFFENDERS: *together with* STATISTICS *of their* NUMBERS. *By* ROSA M. BARRETT.

(HOWARD MEDAL PRIZE ESSAY.)

[Read (in the Author's absence) before the Royal Statistical Society, 20th March, 1900. Sir Francis S. Powell, Bart., M.P., Vice-President, in the Chair.]

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"Le difficile ce n'est pas d'emprisonner un homme, c'est de le relâcher."

"The true history of a nation is not of its wars, but of its households."—*Ruskin.*

IN spite of the great changes and improvements in methods of dealing with criminals, especially juvenile criminals, nearly every civilised country is lamenting their increase—more particularly of those criminals who may be called adult-juveniles, from 16 to 21 years of age. As far as I can ascertain, there are scarcely more than five countries in which there appears to be a true decrease in this class, that is to say, not only a decrease of *prisoners*—because that may only be due to changes of methods, but an actual decrease of *crime*. These countries are New Zealand (15 per cent.), which I have therefore included in my survey, Victoria (39 per cent.), Canada, Ireland, and the States of New York and Massachusetts, and I believe I may add Michigan and South Australia. Therefore the study of methods in these countries is likely to prove the most profitable as regards the best methods of dealing with this difficult class, and for this reason I have given special attention to those places. (Want of space has, however, compelled me to omit parts of this paper when preparing it for the *Journal.*)

The punishment of crime is far older than any attempt to check it—in fact only in recent years does the reformation of the criminal appear to have become an object to be desired—still later were attempts made to *prevent* crime by opening schools to train the young, criminally inclined either from their surroundings, hereditary bad influence, or vicious homes. No institutions have better justified their existence than industrial schools (see p. 191), yet it is evident that much still remains to be done, since there were 60 children under 12 and over 1,400 under 16 committed to prison in 1896 in England, while a third of the burglars were under 21, and a fourth of *all* those convicted of larceny were under 16 (for detailed statistics see pp. 187 and 189). Surely a mere child should not be branded for life by imprisonment: its punishment should be *corrective*. A moment's reflection on a child's heedlessness, imitative faculty, and its malleability, shows that it cannot be the real culprit—the actual culprits are those who have allowed the child to grow up without knowledge of right and wrong, without self-restraint, without good habits. In fact, crime in the young is largely due to a *want* of something—a want of education, of training, of discipline, of industry, of will strength, even a mere want of good food very often, for the inmates of industrial schools have been found to be defective in physical development (see p. 193, also statistics on the same subject on pp. 230 and 257). Dr. Marro, of Turin, also states that he has found nearly all juvenile offenders present abnormal physical and moral characteristics, so that both for the cure and the prevention of juvenile crime, the best medical care is needed to develop and strengthen the body, especially the muscles; this will help to strengthen will power and self-restraint. "The chains of habit are too small to be felt till they are too "strong to be broken." Contamination—by contact with adult and hardened criminals—must as far as possible be avoided; yet, though this is self-evident, England is far behind other countries in checking familiarity with the debasing effects of police courts and cells. Children in custody should be kept and tried apart from adults: such trials should be as far as possible private, to avoid the excitement and notoriety that is such a danger to many youngsters; magistrates, police officers, all officials in fact, or workers among the young, agree as to the importance and benefit of holding separate trials for the young.

Great Britain.

> "The Huns and Vandals who will destroy our civilisation, are being bred, not "in the wilds of Asia, but in the slums of our great cities."—*Macaulay.*

The criminal statistics for 1896[1] for England and Wales, open with the statement of "the extreme difficulty of arriving at any "positive conclusion" as to the increase or decrease of crime—owing in part to changes in the law, increasing efficiency, or otherwise, of the police force, the creation of new crimes—passing of the Summary Jurisdiction Act, &c.

By this Act children under 12 charged with any indictable offence except murder can be tried summarily, if the parents consent, as may juveniles under 16 for larceny and certain specified offences, and adults also if they plead guilty, or the value of the stolen goods does not exceed 40*s.* The Act resulted in an increase of something like 19 per cent. in the number of indictable cases tried summarily. The number of persons tried for indictable offences, and the number of crimes reported to the police, point to a decrease in crime both absolutely and in proportion to the population; both being considerably lower in 1896 than for twenty years, but this decline may not be steady and the decrease is not universal. Begging, for example, shows an increase of 109 per cent. in the same period, the proportion of offences against property increased from 108 in 1836 to 146 per 100,000 of the population in 1896, and of indictable offences from 140·5 in 1836 to 164·9 per 100,000 in 1896. The proportion of *children* convicted of indictable offences has largely increased since 1836. Part of the increase may doubtless be attributed to increased police efficiency: as no doubt there was great laxity so long ago as 1836. On the other hand, imprisonment is now much less used for juvenile offenders than formerly: in 1836 there were 945 prisoners under 12, in 1896 only 60, or respectively 1·34 and 0·04 of the total prisoners. Of the total who were convicted in 1896, 2,877 were whipped, 859 were sent to reformatories, and 535 to industrial schools, and many were discharged under the First

---

[1] "Criminal and Judicial Statistics for England and Wales."

Offenders Act, whereas in 1836 much the same treatment was awarded to both adult and juvenile delinquents:—

Tried for Indictable Offences.

Age.	1836.		1896.		1896.
	Number.	Percentage to Total Prisoners.	Number.	Percentage to Total Prisoners.	Prisoners at each age.
12 years and under....	386	1·84	2,739	6·8	60
12—16	2,037	9·7	5,773	14·33	1,438
16—21	6,092	29·03	7,834	19·45	16,367
21—30	6,592	31·41	9,913	24·62	40,918
Over 30 or not known	5,877	28·01	14,013	34·8	90,152

Note.—The age in 1836 is a year higher always than in 1896; it includes the age named; in 1896 it does not.

		Per 100,000 of the Population of the same age.
Convicted of indictable offences.	Under 12	26
,,	12—16	261
,,	16—21	330

Recent inquiries show that while, owing to changes of method, juvenile *prisoners* are diminishing in England, in Scotland, and still more in Ireland during the last twenty years, *criminals* from 16 to 21 years old are numerous and increasing, but there is a decrease, fairly steady, in the number of offenders *under* 16, and it is probably minor, not serious, offences that are increasing. The English Prison Commission strongly advised raising the age of committal to a reformatory, and having a special reformatory for first offenders up to 23 years of age, with power of transfer according to conduct:—

Juvenile Offenders Committed to Prison.

	Adults.	England and Wales.			Scotland.	Ireland.
		Total.	Boys.	Girls.		
1853....	—	12,238	—	—	—	—
'56....	—	13,981	11,808	2,173	1,062 in 1860	—
'61....	—	8,801	7,373	1,428	1,212	—
'66....	—	9,356	8,099	1,257	1,061	—
'69....	—	10,314*	—	—	1,138	—
'71....	—	8,977	—	—	1,064	1,336
'76....	—	7,138	6,232	906	1,069	1,125
'81....	—	5,483	4,786	697	857	912
'86....	—	4,924	4,348	576	936	452
'90....	—	3,456	—	—	—	462
'91....	—	3,885	3,456	429	797	452
'93....	—	2,924	—	—	—	372
'94....	—	2,252	—	—	—	302
'95....	141,173	1,968	1,789	179	574 (lowest) Boys, 495; girls, 78	257
'96....	147,502	1,498 (lowest)	1,336	102	618 Boys, 538; girls, 81	210 (lowest) only 20 girls

* Highest since 1860.

To these numbers offenders committed to Reformatory schools must be added—1,170 in 1897. The admissions to reformatories in Great Britain (not in Ireland) have been nearly uniform for some thirty years, except for a few years in the eighties, when they rose to over 6,000, and from 1864 to 1868, when under 1,000 yearly were admitted. On the other hand, Industrial Schools show a steady and constant increase from their opening in 1864, when 1,668 were committed, to 1896, when 6,251 boys and 1,083 girls were admitted.[2] In 1897, there were 24,894 boys and 5,397 girls altogether in all these schools, and of these the industrial schools have 24,705, costing over 550,000*l.* a year. Over 7,000 a year have been admitted since 1889. At the close of 1898, 30,395 were under detention in all the schools. Imprisonment for ten days or more used to be compulsory, but is now no longer necessary, previous to committal to a reformatory (it is in Ireland, however, for first offenders under 12). Under 7 years of age a child cannot be a criminal in England, and from 7 to 14 is presumably irresponsible, but children are still often sent to prison while waiting trial, and an inquiry in 1887 into the condition of court-houses, showed that untried, guilty and innocent, young and old, sometimes even both sexes, were kept together for hours and days, and also during transit to and from jail. In Dublin (possibly elsewhere in Ireland) young and old are shut up together awaiting trial: they are left without food and caged behind iron bars like wild beasts, while the court yard is a common play ground for all sizes of children. Juveniles are also sent to jail in the common prison van with adults.

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[2] "Reformatory and Industrial School Reports."

A few more statistics must be given:—

Persons Convicted in England in 1896.*

	Summary Jurisdiction.	Assizes.	Convicted Prisoners.			Percentage of Juvenile Prisoners to Total Prisoners.
			Boys.	Girls.	Total.	
Under 12 years old	2,433	8	59	1	60	0·04
12—16	8,920	194	1,336	102	1,438	0·097
16—21	45,553	1,529	13,443	2,924	16,367	10·98

* "Judicial Statistics, 1897."

Some Causes of Juvenile Delinquency.

One matter is of grave importance—it is largely the children of drunken parents who people our prisons and institutions (see pp. 207, 210, 230 and 253), and it has been estimated that one-fifth of juvenile crime in England is due to this cause. The arrests for drunkenness[3] have more than doubled in the last forty years.

Arrests for Drunkenness.

The Annual Averages during the following Quinquennial Periods are:—

1857-61.	1867-81.	1877-81.	1882-86.	1887-91.	1892-96.	1896.
84,358	121,669	184,099	185,874	176,601	175,628	187,258

Another signpost that shows how crime may be most successfully fought, is found in the fact that of convicted prisoners in England in 1896, only 3,167 could read and write well, 31,221 not at all, and 114,460 very little, so 149,000 were practically uneducated, or, in 1895, 2·96 per cent. prisoners were well educated, while 96·9 per cent. could barely read and write. Still more striking is the fact that while 20,436 prisoners were said to be skilled workmen, 83,299 had no occupation, 14,138 were labourers, &c. Judge Kerr, of Minnesota, said that four-fifths of all the criminals he had tried under 25, and nearly all under 21, had learnt no trade. Few of the artisan class ever become prisoners; probably on an average three-fourths are unskilled labourers or earn their living by precarious methods. In one prison, of 100 male prisoners 23 per cent. were skilled, 77 per cent. unskilled labourers—three to four times as many: this is probably true among prisoners in general.

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[3] "Judicial Statistics."

To return to the children: one-third of all burglars are boys 16 to 21 years old, and the proportion of criminals from 16 to 21 is increasing in England as in most countries, and is higher than at any other age;[4] it is nearly (sometimes over) a fifth of the total criminals. The following table shows that one-fourth of all the convictions for larceny were against juveniles under 16 (1894), while 26 per cent. of crimes against morals are committed by those under 21:—

Percentage of Convictions of those under 16.

England and Wales.	1893.	1894.
Class 1 { Crimes of violence	6·64	7·84
Class 1 { ,, against morals	6·43	5·12
Burglary, housebreaking, &c. ...	7·02	7·99
Robbery	2·42	—
Larceny from person	10·01	7·47
,, by servant	13·38	13·46
Simple larceny	24·58	25·33
False pretences	2·39	2·39
Injury to property	14·70	21·39
Forgery, &c.	1·93	1·42
Coining, &c.	0·61	—

No corresponding table appears to be given in the 1896 statistics.

Boy criminals are five to six times as numerous as girls; 85 per cent. of juvenile offenders are boys, 15 per cent. girls. Of those under 21 the proportion is 87 boys to 13 girls; of those committed to reformatories there are 88 per cent. boys to 12 per cent. girls, and to industrial schools 76 per cent. boys to 24 per cent. girls (this is in England, not in Ireland, pp. 198 and 199).

Historical Notes.

Consideration for juvenile delinquents began in 1837,[5] children from 7 years old were then to be found in prison, and lads of 10 in hulks and convict ships. Philanthropy had attempted one or two reform schools, such as Redhill, which has received some 6,000 children, but it was not till 1838 that the first State attempt was made to differentiate the treatment of adult and juvenile offenders, by ordering the latter to be sent to a special place of discipline;

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[4] D. Morrison, "Juvenile Offenders."

[5] Statistical Society, Ireland. Papers by Mr. Daly, chief clerk, D.M.P. (1891), and September, 1897, and "Chambers's Encyclopædia."

for this purpose Parkhurst was established for boys aged from 16 to 18; it was, however, too much of a prison, and failed; it was closed in 1864. The Reformatory Schools Act was passed in 1854 (not till 1868 for Ireland), and later on the Industrial Schools Act. Whipping was first ordered for certain offences to those under 14 in 1847; in 1850 the first distinction as regards corporal punishment was made between adults and juveniles, and in 1861 whipping was recognised as specially suitable for lads under 16, and is now given to about 3,000 a year, under strict regulations; it is rarely given in Ireland or the Colonies. Since 1874 in England, and 1884 in Ireland, nearly all juvenile cases can be tried by a magistrate and need not be held over for a judge and jury, and since 1879 a fine instead of imprisonment may be given for certain offences by summary jurisdiction: and also since 1879, under the First Offenders Act, the judge may release such on his own recognizances to come up for judgment if called on—and possibly to pay costs—if the offender is young or the offence is an act punishable by less than two years' imprisonment. Owing to these limitations, probation is less employed in England than abroad. The principle, however, has been recognised that reformation, rather than retribution, is to be aimed at with young offenders. Under the Summary Jurisdiction Amendment Act, 1899, whipping may be given to all offenders under 14, but only if the offender so chooses. Unfortunately the Acts are imperfect, reformatories are needed for first offenders over 16, for whom there is no place but prison: the First Offenders Act requires inquiries to be made, but provides no machinery for making them: probation officers do not exist in Great Britain, while juvenile offenders over 16 are treated in the same way as adults (compare Massachusetts and New York methods, pp. 230 and 239). Happily there are but one-sixth as many juvenile prisoners in England now as thirty years ago: for all officials recognise the injurious effect of imprisonment; contamination is unavoidable, and the fear of prison is lost; but being the simplest form of punishment, it is far too generally given, just as hanging used to be a hundred years ago. "The "oftener you go, the hardener you get," as one jail-bird put it.

Reformatory Schools are for children from 12 to 16 convicted of any offence punishable by penal servitude or imprisonment, and sentenced to ten or more days' imprisonment (not for crime punishable by a fine). Such may be sent to a reformatory for two to five years, but not beyond their 19th year (if over 14, it must be for a first offence). Those under 12 if previously convicted, and those under 10 if previously charged and sentenced at assizes, may also be sent to reformatories. The average detention is three-

and-a-half to four years, licensing out is little used, though allowable after one-and-a-half years' detention. Five years after the reformatory system was established, juvenile crime, or rather juvenile prisoners, had diminished 50 per cent. INDUSTRIAL SCHOOLS are, roughly, for children under 14 not convicted of crime (or convicted for the first time of a crime punishable by imprisonment, but not felony), and for those under 12, who are uncontrollable, keep bad company, beg, &c. DAY INDUSTRIAL SCHOOLS are for voluntary cases and for offenders under the Compulsory Education Act, as are truant schools; in both these the detention is short, but increases for repeated offences. In England, not in Ireland, supervision may be ordered for two years, or till the child is 18, after its release from an industrial school:—

	Reformatory Schools, England.			Industrial Schools.		Industrial Schools.	
	Total.	Boys.	Girls.	Boys.	Girls.	Truant.	Day.
Committed in 1898...	1,476	1,309	167	3,319	920	2,297	2,901

In 1897, 1,153 out of 1,170 were committed to Reformatories without imprisonment. The cause of committal is generally larceny, vagrancy, &c. Most had been previously convicted, some over six times. 70 per cent. girls, and 71 per cent. boys who had left were said to be doing well and in regular occupation, although about a sixth are re-convicted after their discharge, and in Scotland a fourth. From the industrial schools nearly the whole of those discharged had completed their sentence, so little is licensing-out used; 78 per cent. of those discharged are said to be doing well, and from day industrial schools 63 per cent. In 1898 nearly three-quarters of a million children, or one-eighth of the entire child population in England were not attending school.[6] A large proportion of juvenile criminals come from street hawkers and those allowed to sell in the streets, those so employed rarely taking to a regular occupation in later life. Though all truants are not criminals, yet truants have a tendency towards criminality and lawlessness. "Truancy," says Mr. Drew, of the London School Board, "is to be credited with nearly all juvenile crime."[7] This statement is confirmed elsewhere. In Manchester 67 per cent. of the children committed to industrial schools had previously been street hawkers, in Leeds 60 per cent. Another great evil, untouched as yet even by the Compulsory Education Act, is the great increase of *tramps* and tinkers; in the last six years they have doubled, and, according to the Local Government Board returns, from 30,000 to 50,000 of these vagrants are children, growing up vicious, ignorant, and without education. Imprisonment for begging is often the beginning of a life of crime.

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[6] H.M. Commissioners of English Prisons. "Judicial Statistics," 1897.

LOCAL REPORTS. Juvenile crime is not now increasing in *Manchester*. The First Offenders Act is here supplemented by private philanthropy. The Superintendent of the Police Courts Mission to lads attends the Court daily. Both Manchester and Liverpool have now passed bye-laws under which no children may be employed as street sellers without a badge and license, and the hours are restricted; none under 11 are to be so employed, and all must be decently clothed. *Liverpool* has long held a notorious position with regard to crime in general, and especially juvenile crime. About fifty years ago the population was 300,000, and there were 51,000 criminals in seven years, one-tenth of whom were under 17, and one-fifth were convicted five times in three years. At the present time, one-ninth of all the prisoners in England are in Liverpool,[7] one-seventh of all those from 16 to 29 years old; one-third of the whole reformatory population, and nearly one-third (29·1 per cent.) of all reconvicted ex-reformatory inmates. Captain Nott-Bower[8] says no city can compare with it in juvenile crime; in 1898 there were 194 arrests of children under 10 for indictable offences, 36 for non-indictable, and 699 and 373 respectively of children from 12 to 16. Great attempts are now being made, however, to stem the tide. Whipping is said to prove successful; in five years 489 boys were whipped, and only 135 again convicted; of these 44 were again whipped, and only 10 of these were subsequently reconvicted—a moderate proportion of cures. The School Board officers take up cases of juvenile offenders for inquiry, &c., when so recommended by a stipendiary magistrate, and make contracts with industrial schools for their admission.

In *Cheltenham*[9] up to 1856 juvenile crime was rapidly increasing, then by the remand of boys to schools on a second conviction, the gangs were broken up, and hardly a single habitual thief was left; only 13 were so committed in 1896.

In *Wakefield* prison, attention was drawn to the fact that of 840 prisoners 112 could not read or write, or 13·3 per cent.; and 35·7 per cent. had been mining since they were 10 years old. In Wandsworth prison on a certain day 23 per cent. of the prisoners 16 to 19 years old called themselves skilled workmen, probably nearly 77 per cent. had never learnt any trade. Education, especially trade education—one by which a living can be earned—is a great preventive of crime, as are habits of industry.

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[7] Mr. Thomson, deputy governor of the prison.

[8] Late chief constable of Liverpool.

[9] Howard Association.

The conclusion that may be plainly drawn from all the foregoing statistics is, that crime decreases in proportion to the amount of care taken of the young, and this care, if an apparent expense for the moment, saves in the long run. Our criminals cost some 35*l.* a year each (apart from the heavy judicial expenditure). To repress crime we spent in 1867,[10] 2 to 3 million pounds, on primary education less than one; at the present time 10 million pounds is spent annually on crime, and on elementary education some 8 million pounds. A reformatory school inmate costs annually from 15*l.* to 28*l.* in England; in Scotland 16*l.* to 26*l.*; industrial school inmates from 13*l.* to 28*l.*, or for the ships 32*l.*; in day industrial schools (2,804 inmates) the cost is 10*l.* 15*s.*: truant schools 19*l.* Part of this, about 1*s.* in the £, or one-twentieth of the actual cost, is paid by the parents. More might be paid were the recovery of debt simplified, but the cost might be immensely reduced by the wider application of the licensing-out system. To carry this out funds are required for officers to supervise those licensed out, and also power to renew the Government grant for any recalled children (as in Australia). In England 15 per cent. of the boys and 9 per cent. of the girls are licensed out; in Victoria 70 per cent. and 54 per cent. respectively. The return of industrial school children to relatives is generally a great mistake—only one-fourth as many of these turn out well as a rule, as is the case with those otherwise disposed of. In one school, where 70 per cent. did well, not one did so who returned to relatives; in another, 77·8 per cent. did well, including those returned to relations, compared with 86·8 per cent. of those not so returned.

It is worth noting that the children admitted to industrial schools are below the average physically[11] in height, weight, &c., and their mortality is above the average; they are also more abnormal—29 per cent. were found to be physically or mentally defective as compared with 17 per cent. in ordinary day schools, and this statement holds true of those sent to prison or reformatories, while one-third of the juvenile criminals are below the average in mental power. Hence treatment of these classes should be largely regenerative.

Scotland.

There is some decrease in the number of criminal offences during the past ten years, but a great increase in the prisoners, since 1850.

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[10] D. Morrison, " Juvenile Offenders."

[11] Sir J. Hibbert.

Annual arrests of those under 12 years old were 157 per 10,000 of the population in 1898, or 2·3 per cent. of the total, and of those under 16, 862 per 10,000 of the population, or 5·8 per cent. Average during periods of five years:—

*Prisoners. Yearly Average.**

	Number.	Ages.			Criminal Offences, 1896.	
		Under 16.	16—18.	18—21.		
1851........	24,311	2,376	1,424	3,688		
'61........	19,525	1,224	982	2,357		
'71........	27,948	1,141	1,351	3,287		
'81........	49,588	1,090	1,976	5,836	Under 12 years old	7
'86........	44,647	936	—	—	12—16	65
'91........	51,774	861	1,463	4,392	16—21	375
'96........	57,055	670	1,410	4,151		

* "Judicial Statistics, Scotland."

There is a marked decrease in the number of prisoners under 16 years of age—those from 16 to 18 increased up to 1881, but have now fallen to much the same number as in 1851; while those from 18 to 21 have increased decidedly; here again 1881 marks the maximum, and the numbers are beginning now to decline again.

Whipping was ordered for 422 juveniles. The cost of a prisoner is 22*l.* 1*s.* 5*d.*, or 19*l.* 17*s.* 8*d.* net, except at Peterhead Convict Prison, where it is 34*l.* 19*s.* 2*d.*

An Industrial School Act for Scotland was passed in 1854. In Aberdeen juvenile crime has been reduced 50 per cent. since the establishment of a day industrial school there.

In 227 cases out of 242 committed to reformatories in Scotland no imprisonment was given.

Ireland.[12]

While the number of adult criminals in Ireland has increased (it was lowest in 1872, highest in 1879, and has been falling somewhat since then; it was 16 per cent. higher in 1883 than in 1872), there has been a marked and continuous decrease of crime among *juveniles*, no less than 39 per cent., and this drop, that is of those committed to prison, is fairly regular. The committals to reformatories are also decreasing; they rose from 1859 to 1875 (the highest number was reached then, and again in 1880), but are now falling, while the industrial school numbers fluctuate (see tables p. 198). In 1853 18·3 per cent. of the total offenders were juveniles, in 1883 1·5 per cent. Unfortunately imprisonment for fourteen days is still compulsory in Ireland previous to committal to a reformatory in the case of first offenders under 12, hence some quite young children are sent to prison still, but the judicial statistics for 1895 give no ages in many of their lists, though promising to give them in future. In 1896, 562 children under 10 and 1,678 under 15 were committed in the Dublin Metropolitan Police Court alone. The total offenders are 3,995 per 100,000 of the population; there was an increase in 1896 both of indictable and non-indictable offences. The estimated population is four and a half millions; the indictable offences were 19·3 per 10,000 of the population.

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[12] Judicial and Criminal Statistics, Ireland.

The report of the General Prisons Board, 1897-98 (received since the above lists were compiled), states that while the proportion of prisoners per 100,000 of the population is less than it was in 1854—there has been no regular decrease since then—it is a fluctuating proportion. Prisoners, however, decreased 23·8 per cent. (and the population 13 per cent.) between 1876 and 1895.

There is, however, a great and steady decrease of *convicts*, their number has been reduced by one-half since 1883, and in 1897 only 1 female was sentenced to penal servitude in the whole of Ireland; there are now only 17 female convicts in custody, in 1865 there were 504. There is a marked diminution of serious crime among females, in part surely due to the many industrial schools for girls. In five years only 1 female convict was sentenced to penal servitude who was previously a reformatory school inmate. 36 per cent. of the prisoners were quite illiterate, as compared with 16·8 per cent. in the general population. The total convicted prisoners in 1895 were 26,047 (1898, 38,383). Of these there were:—

		Under 12.	12—16.	16—21.
1895	Number	20	190	2,880
	Proportion to the total	0·1 per cent.	0·9 per cent. boys 0·3 ,, girls	13·6 per cent. boys 6·5 ,, girls
1896	Number	16	147	3,021 (2,322 males, 699 females)
	Proportion to the total	0·1 per cent.	0·7 per cent. boys 0·1 ,, girls	12·2 per cent. boys 6·8 ,, girls

*Ireland.**

Year.	Habitual Criminals.	Proportion of Prisoners per 100,000 of the Population.
1854....	—	93 (highest)
'60....	—	43
'70....	907	42 (lowest)
'71....	1,058	—
'72....	840	—
'73....	1,118	—
'74....	1,062	—
'75 ...	986	52
'76....	964	—
'77....	609	—
'78....	272	—
'79....	365	—
1880....	285	50
'81....	224	—
'82....	189	—
'83....	164	—
'84....	172	53
'85....	208	—
'86....	250	—
'87....	155	—
'88....	160	53
'89....	131	55
1890....	133	53
'91....	144	50
'92....	140	53
'93....	126	50
'94....	181	47
'95....	189	51
'96....	167	51
'97....	174	56
'98....	156	50

Year.	Convicted.				
	Under 12.		12—16.		Total under 16.
	Male.	Female.	Male.	Female.	
1853....	—	—	—	—	12,238
'54....	—	—	—	—	10,786
'56....	—	—	—	—	12,268
1860 ..	—	—	—	—	1,429
'61....	—	—	—	—	1,345
'66....	—	—	—	—	976
'69....	—	—	—	—	1,020
1870....	—	—	—	—	1,186
'71...	—	—	—	—	1,083
'72....	—	—	—	—	1,200
'74....	—	—	—	—	1,190
'76....	—	—	—	—	1,065
1880....	—	—	—	—	1,052
'81....	—	—	—	—	1,053
'83....	—	—	—	—	803
'86....	—	—	—	—	452
'89....	63	4	330	66	463
1890....	44	8	337	63	452
'91...	53	—	344	65	462
'92....	39	2	295	73	409
'93....	37	4	250	81	372
'94....	25	3	218	56	302
'95....	20	—	207	30	257
'96....	15	3	172	17	207
'97....	33	1	170	15	221
'98....	19	—	180	23	222

* "Report of General Prisons Board." Ireland, 1897 and 1898.

The average annual cost of a prisoner is 34*l.* 1*s.*, or 32*l.* 14*s.* 4*d.* net. Two-thirds of the prisoners were only imprisoned for two weeks or less.

Amongst the prisoners in 1897 were one girl, one boy only 8 years old, and three of 9, and twelve of 10 years of age.

Of the total prisoners in 1898 (38,383), 11,289 were females, and it is said that 43 per cent. of these were prostitutes.

Of all the prisoners, only 166 were well educated, whilst more than half had little or no education. Of the juveniles, one in 1897, 25 in 1898 had a good education, but two-thirds were almost entirely uneducated. The totally uneducated in Ireland have decreased from 53 per cent. in 1841, to 18 per cent. in 1891 of those over 5 years of age.

It has been noted that farm work is highly successful among prisoners—few of those employed in this way give trouble.

Drunkenness—which caused 45 per cent. of the total committals in 1895, 47 per cent. in 1898, and 53 per cent. of the convictions—is sadly on the increase. Mr. Justice Kenny notes (October, 1899) that the offences for this cause alone brought before him in Dublin for the months of August and September, were almost double those in the same months last year, 1898. The increase is mainly in the three cities of Belfast, Cork, and Dublin. In the six largest towns the arrests for drunkenness were 2,600 per 100,000 of the population; for all Ireland, 1,920 per 100,000.

It is noteworthy that one boy 11 years old received a week's imprisonment for begging, another, also 11, fourteen days' imprisonment and five years in a reformatory, and the same sentence was given for stealing a mouth organ worth ninepence; one boy of 9 was also given this sentence.[13] Juvenile prisoners are all sent to Mountjoy prison in Dublin if their sentence exceeds a month; they are most judiciously treated there, educated and kept apart from adults; but this care and separation comes too late, for already the juveniles have been in contact with adult offenders in court, in the police cells, and the police vans.

There were 63,332 juvenile offenders committed to prison in Dublin alone from 1848 to 1852; 5,141 were under 10 years old, and 5,980 were girls.

In 1853	12,236 juveniles under 16 were committed to prison (5,334 were girls, of whom 4,254 were under 16 and 705 under 10).
" '81	853 juveniles under 16 were committed to prison (561 girls for larceny).
" '98	222 juveniles under 16 were committed to prison (23 girls for larceny).

Some 30 per cent. of all the inmates of industrial schools are from Dublin; 1 per cent. of the whole Dublin population are committed to industrial schools.

The following tables, compiled from the "Judicial and Criminal "Statistics," show the effect of the work of reformatories and industrial schools on juvenile crime:—

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[13] While revising this, I have heard of a small boy who has been sent to prison (possibly to his life-long ruin) for throwing a stone at a gas lamp.

Year.	Committals to Prison.*				Percentage of those under 16 to Total Commitments.	Inmates of Reformatory Schools.			Admissions to Industrial Schools.		
	Total Adults (over 16 Years Old).	Juveniles under 16.									
		Boys.	Girls.	Total.		Boys.	Girls.	Total in the Schools.	Boys.	Girls.	Total.
1870....	32,370	—	—	1,186	—	681	175	856	258	1,171	1,429
'71....	—	—	—	1,083	—	788	192	970	499	633	1,132
'72...	27,785	1,068	268	1,336	4·58	838	211	1,049	738	886	1,624
'73....	31,483	1,099	306	1,405	4·27	883	206	1,089	487	657	1,144
'74 ...	36,554	1,039	165	1,204	3·18	879	221	1,100	496	561	1,057
'75....	37,108	881	132	1,013	2·65	935	225	1,160	490	513	1,003
'76....	39,899	930	195	1,125	2·74	860	239	1,099	367	495	862
'77....	41,521	959	185	1,144	2·66	824	253	1,077	349	596	945
'78....	43,218	946	143	1,089	2·52	834	244	1,079	366	499	865
'79....	43,416	810	146	986	2·22	873	228	1,101	553	577	1,130
1880....	37,490	848	169	1,017	2·64	928	232	1,160	774	830	1,604
'81....	35,871	746	166	912	2·56	936	213	1,149	524	733	1,257
'82....	34,028	918	129	1,077	3·06	956	184	1,140	611	752	1,363
						New Admissions.					
'83....	32,371	680	123	803	2·48	196	54	1,099	483	703	1,186
		Under 12.									
'84....	37,829	108	—	835	—	199	45	1,053	601	703	1,304
'85....	39,554	83	—	787	—	146	18	969	963	755	1,718
'86 ..	40,764	105	—	925	—	178	30	936	733	906	1,639
'87...	40,779	92	—	809	—	146	32	866	862	685	1,547
'88....	43,704	88	—	751	—	193	29	855	666	771	1,437
'89....	38,792	87	—	576	—	205	23	763	935	711	1,646
1890...	40,783	73	—	568	—	127	19	744	752	789	1,541
'91....	37,568	77	—	588	—	141	21	716	651	723	1,374
'92 ...	34,583	68	—	568	—	131	14	673	881	704	1,585
'93...	34,387	63	—	486	—	110	28	619	750	702	1,452
'94....	31,474	57	—	424	—	120	15	604	751	675	1,426
'95....	30,270	33	—	374	—	112	10	589	752	815	1,567
'96....	32,956	35	—	310	—	110	9	553	837	739	1,576
'97....	34,911	62	—	345	—	157	16	605	778	782	1,560
'98....	38,383	31	—	314	—	120	16	581	747	663	1,410

* From "Judicial and Criminal Statistics," and "Reports of the Reformatory and Industrial "Schools in Ireland," and from statistics kindly given me by the inspector.

In 1897 the number in reformatory schools was only 605 (scarcely half as many as in 1883); there were 8,783 in industrial schools. There is no reformatory for Protestant girls.

There are three reformatories for boys and three for girls; one of these is for both boys and girls. 84 per cent. of the boys and 87 per cent. of the girls who leave do well. 5,707 under 16 were admitted to reformatory schools from 1868 to 1883. There is a decline in the admissions to reformatories of 55 per cent. from 1876 to 1890, and of 50 per cent. from 1880 to 1895.

	England and Wales.	Total.	Scotland.	Ireland.	Total.
Number of reformatory* schools for boys and girls (three are ships)	39	—	9	6	54
Industrial schools: boys	60	145	35	21	214
Industrial schools: girls	45			49	
Industrial schools: both	4			1	
(23 are day industrial schools, and 13 are truant schools)				71	

* None for Protestant females in Ireland.

In Great Britain there were 14,249 *boys* in industrial schools in 1897, and 3,873 in Ireland. In Great Britain there were 4,548 *girls* in industrial schools, 4,910 in Ireland; or more girls than in the whole of Great Britain.

There is a decline in the number of *adults* committed to prison of 16 per cent. between 1872 and 1883, and of 39 per cent. among juveniles in the same period.

Europe.

The penal laws of most European countries contain provisions by which judges or other authorities, acting with or without the consent of the parent or guardian, have power to commit children who have committed criminal acts—but who from their juvenile age cannot be punished as criminals—to reformatory or other educational institutions. This is the case in Denmark, Holland, Finland, Belgium, most of the Swiss Cantons, Sweden, Italy, Austria, Spain, Croatia, and Russia. In the three latter, however, especially Russia, the laws exist on paper almost entirely, and little, if any, provision is made for carrying them out. In many of the other countries, even in Finland, the provisions are more effective, though there are not a sufficient number of either public or private institutions. As a rule, if a child has committed a crime, but is too young to understand or be responsible for its act, it may be sent to special institutions. The age of responsibility varies widely in different countries, thus, children may not be prosecuted for criminal acts when under 7 in England, New York, Russia, and Portugal; in Italy and Spain the age is 9; Norway, Greece, Austria, Denmark, Holland, and some Swiss cantons,[14] 10; other cantons and Germany, 12; Vaud and Valais, 14; France and Belgium, no prosecution allowed under 8; while Sweden and

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[14] Udkast til Lov.

Finland have raised the age to 16. Those under that age are not accounted as criminals, over that age they are, and may be punished as such, though usually more leniently than adults. Where the age is so high as 16, little or no provision is necessary for juvenile criminals. Children under the ages given cannot be removed except in Germany, Vaud, and Holland, where they can be placed under the care of the State in a family or institution. In some countries, for bad treatment or neglect, the guilty parent or guardian loses all right over his child, which becomes a public charge and ward of the State. This is so in France, Italy, the Swiss cantons of Lucerne, Obwalden, and Gall, and many of the United States. As a general rule preventive work is being more and more extended, and preparatory institutional or correctional life awarded temporarily, with subsequent boarding out in families, where the child is not thoroughly vicious and corrupt. Whipping, by magistrate's order, is allowed only in Great Britain, Norway, and Denmark, in Europe; in Denmark only, I believe, is it given to *girls* under 12, boys up to 15, and occasionally even to 18; in Norway to those from 10 to 15.

Admonition is an old method of dealing with first offenders, and is acted on more or less in England, Russia, France, Italy, some of the Swiss cantons, and German States, as Saxony, and in Austria, Belgium, and New Zealand.

Terrible facts and figures are cited to show the frightful increase of crime in nearly every civilised country. Thus Havelock Ellis, in "The Criminal," says:—"The level of criminality is "rising, and has been rising during the whole of the present "century throughout the civilised world. In France, Germany, "Italy, Belgium, Spain, and in the United States the tide of "criminality is becoming higher steadily and rapidly. In France "it has risen; in Spain the number of persons sent to perpetual "imprisonment nearly doubled between 1870 and 1883; in the "United States the criminal population has increased since the "war, relatively to the population, by one-third."

Conclusions drawn from the statistics of different countries are hardly fair; some keep careful records of all, some only of serious offences. Germany counts the number of persons convicted; France the number of cases. Juvenile *prisoners* are diminishing in many countries, but it does not follow that *crime* is also, but only that methods have changed.

Belgium.[15]

Belgian laws dealing with juvenile offenders have recently been much changed and improved. In the penal law, two distinct periods are recognised—one where the criminal is *under*, the other where he is *over* 16 completed years of age, or, as we should call it, under 17. In the former case it must be proved whether the accused fully understood the nature of his act and its consequences; upon the judge rests the responsibility of deciding whether the child's moral nature was sufficiently developed for this. If the accused, being under 17, is judged to have acted *without* discernment, he is to be acquitted and returned to his parents after a suitable reprimand, but if it appears unwise for the child to return to his former surroundings (which may have been the cause, from bad example or bad education, of his mis doings), the judge has power to protect the child by:—(1) Only returning him to the parents on their giving security for reform; or (2) by putting the child under the care of the State during his minority, or for a shorter time, but in no case beyond his 21st year. In this case the child must be sent to a special reformatory or charitable institution. If the accused, however, acted *with* knowledge or discernment, he is held guilty, and punished accordingly, though less severely than an adult—reform, not punishment, being the chief object. After release from imprisonment, the juvenile delinquent if under 18 (since 1891) may be detained under State control, by order of the court, till his majority. The law does not define "discernment," but, to be judged guilty, the child must have acted not only with a general knowledge of right and wrong, but with an understanding of that special act and its consequences; this the judge or, in assize cases, the jury, must ascertain and then, after also ascertaining his age, decide on his responsibility for the crime, or if accused of several crimes, for each crime separately. After the age of 17 no difference is made between offenders. To prevent the evil effect of a short imprisonment, a child under 16 may not now be sent to prison (nor was a fine allowable until 1893), even if the crime of which he is accused is not a first offence; he may be placed under State control if this appears necessary for his future welfare. This rule applies to all slight offences punishable by imprisonment for eight days or less, or by a fine of 26 frs. Capital punishment may not be pronounced against those under 18, but penal servitude must be awarded for life instead. Fines are increasingly valued as a substitute for imprisonment, and are a sure way of making parents guard their children more strictly.

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[15] "Cours de droit criminel" and other works, by M. Thiry, professeur de droit criminel à l'université de Liège.

For juvenile delinquents who acted without discernment, there is a choice between the following courses, which may all be regarded as methods of education rather than of punishment:—(1) The child may be returned to his parents after admonition to them and to him. This is an end of the prosecution. (2) He may be returned subject to surveillance, not by the police but by a special body, the *comité de patronage.* (3) The delinquent may be placed in a foster family if the parents consent. (4) He may be sent to a *Maison de bienfaisance de l'État.* (5) Or sent to a disciplinary establishment under indefinite detention, but not beyond his majority. He may be conditionally liberated in the last two cases, subject to recall for bad conduct. In all these cases the parents may be ordered to pay costs, besides a fine, and (in the case of theft) to make restitution. In cases where the offence was slight, the Minister decides the future of the child, and classifies it as he judges best; but in serious cases great care is necessary, and ordered to be taken, as to selecting the home most suitable for each individual child according to his temperament, &c. For this object a special defender is chosen by the parents, or, failing them, by the officials. By a decree of November, 1892, if the parents do not appoint any one, the representative appointed by the bar for the defence of juvenile offenders takes up the matter. This counsel's duty is to select the course best suited for the child (even when the parents oppose it); he does not act in conflict with the judge, but as his collaborator, each wishing for the good of the child. The "comité de patronage" are also notified of any trials of juvenile offenders (Ministerial Circular, November, 1892), and are consulted as experts in the care of dependent and delinquent children. On them devolves the responsibility of selecting suitable families for those boarded out and of visiting each child subsequently.

Where conditional liberty is given, these societies, now founded in many towns, give close supervision and make reports. Juvenile delinquents may not be deprived of their civil rights nor placed under police surveillance. In 1888 a Probation Act for first offenders convicted of misdemeanour was adopted.

All establishments for the reception of children placed under the care of the State by magisterial decree or administrative authority are now under one administration—"la bienfaisance" (reformatories were under prison administration till 1890), and have been called, since 1890, Écoles de Bienfaisance de l'État—this term includes the écoles de reforme (subsequently called écoles agricoles), founded some years ago for juvenile beggars and truants under 18 years of age. By the law which came into force in January, 1892, the preliminary imprisonment of children, placed under State care by judicial authority, is abolished, as is the distinction between those condemned and those not. Every-one over 14 found wandering, begging, &c., may be arrested (and until 1892 imprisoned) and placed under the care of the State for a certain time in special institutions. When a person under

18 years old is brought up as a vagabond, or beggar, and such vagabondage or begging is proved to be habitual, the judge must order his detention till his majority, placing him in an école de bienfaisance under the care of the State. Adult mendicants are sent to the depôts de mendicité—hence the entire separation of adults and juveniles is secured. Separation is carried further than this—there are special places for boys 16 to 18 years old of this class, and all those sent to the école de bienfaisance are subdivided according to their ages (the age on committal is the determining point). Those from 13 to 16 are to be kept apart from those who were older when committed; those under 13 being kept apart again for the whole term of committal, so that the younger may not be contaminated by those who have lived longer in bad surroundings. Detention is authorised for seven years in certain cases, but truancy must first be proved to be habitual, and for a first offence a warning must be given to both parent and child. After six consecutive months in the school, the child may be apprenticed or placed—if the parent agrees and it seems good for the child—in a public or private school or charitable institution, subject, however, to recall until majority for bad conduct. Further, these children may be conditionally returned to their parents (with the sanction of the Minister of Justice) when satisfactory guarantees are given, but subject to recall if being at home works badly for the child's character. Children may be placed in the écoles de bienfaisance by other specified authorities (the sheriff, &c.).

Girls under 13 (14 until 1894), placed under State care for any crime are sent to the school at Beerneem, in Flanders, those over 13 to Namur. Boys under 15 are sent to Ruysselede, in Flanders; this school is specially intended for truants and beggars, but since 1889, those under 11, condemned for other offences, may also be sent here. Boys from 15 to 18 years old are sent to Reckheim; younger boys from the southern provinces go to St. Hubert and from other provinces to Namur; the boys and girls here are in separate quarters. There is also a disciplinary quarter for immoral or uncontrollable girls, whose example would be injurious to their companions, at Bruges, and for the worst boys at Ghent: these schools are only used for children transferred from the écoles de bienfaisance. To gain physical control, military manœuvres and discipline, fire-drill, swimming, &c., are taught at Ghent in the disciplinary quarter. The State used to pay half the cost of those committed, the commune to which the children belong or in which they were committed, the other half, but as this militated against the rescue of children (the communes grudging the expense), the State now pays the entire cost. The industrial colonies, both those for adult and for juvenile vagabonds and beggars, have been most successful. Belgian prisoners are on the whole well treated. Female prisoners are under the care of religious sisters, about ten sisters to 100 women.

Oddly enough, the above laws show that if a child committed, say, theft, *with* knowledge, he gets for a maximum imprisonment two-and-a-half years; if it is decided that he acted *without* knowledge, he may be deprived of liberty, by being placed in an école de bienfaisance, for much longer!

On the whole, it is stated that there is little crime in those under 16, and that crime in general appears to be decreasing, concurrently with the increase of education. Of those from 16 to 21 years of age the criminals constituted 9 per cent. of the total accused during the period 1856-75 and of those from 21 to 25, 14 per cent. of the total. The following statistics were given by Professor Kuborn, but I have been unable to obtain statistics of juvenile criminals, owing no doubt to the changes in legislation, age of responsibility, &c.

Hypnotism has been tried with good effect on vicious children, doctors having resorted to it as a moral cure when other means of reform have failed.

Statistics given by Dr. Prof. Kuborn at the International Congress of Hygiene, 1891.

Period.	Number of Persons Accused of Crime in Proportion to the Population.	Number Accused of Capital Crime.
1850-55	1 accused person to 18,543 people	1 to 90,228
'56-60	1 ,, ,, 17,095 ,,	1 ,, 97,536
'61-67	1 ,, ,, 27,951 ,,	—
Penal code modified.		1 ,, 115,514
1868-75	1 ,, ,, 37,339 ,,	1 ,, 102,523
'76-80	1 ,, ,, 34,563 ,,	—
'81-85	1 ,, ,, 40,367 ,,	—

Note.—This table shows a gradual and fairly regular decrease in crime, in part to be attributed to education (in part possibly to legislative changes), education having made great strides during this period.

	Number of Pupils in Elementary Schools.	
1860.........	7,745	1856-75, 9 per cent. of accused were 16 to 21 years of age; 14 per cent. were 21 to 25 years of age In 1866 (omitting children under 7), 58 per cent. of the population could read and write; in 1880, 78 per cent. could read and write
'70.........	9,308	
'75.........	10,962	
'81.........	16,777	
'88.........	20,374	

	Percentage not able to Read and Write.	Percentage able to Read and Write.
1880.................	22·6	78·3
'81.................	19·3	
'82.................	19·1	
'83.................	18·5	

The uneducated have decreased from 44 per cent. in 1850 to 18·5 per cent. in 1883; in the same period accused persons have decreased from 1 in 18,453 to 1 in 40,367.

At Liège (as in other Belgian towns) there is a "société de "patronage de l'enfance, des condamnés et des vagabonds." The report for 1897 shows that a State subsidy of 2,000 frs. was received, besides 3,300 frs. from the commune. There were 142 delinquents (new cases) dealt with in the year, and 104 under supervision, liberated conditionally. The object of the society is to protect and care for juvenile delinquents. All particulars relating to juvenile criminals are ascertained before they are dealt with.[16]

Many of the Belgian towns have also aid societies and committees for the defence and protection of juvenile delinquents. They inquire into the condition of the child, its home, &c., and have proved most useful. The efforts directed against begging have proved extraordinarily successful, and begging has diminished by one-half in the last three years.

Conditional conviction (that is, suspension of the execution of a sentence) has been given since 1888 to offenders whose act was punishable by imprisonment of not more than six months. If there is no fresh conviction in five years, the sentence lapses; if there is, the two sentences must be undergone. During the first nineteen months after this law was passed, out of 284,000 who were convicted, 14,000 (only 200 of whom were reconvicted), received conditional liberation. Now some 10 per cent. of those arrested receive conditional conviction, and only 3 per cent. of these are reconvicted.

France.

Juveniles are separated from adult criminals both during trial and while under arrest;[17] after the age of 16 the juvenile comes under the same law as adults. Crime among those under, as well as among those over, 16 is increasing. In 1841 there were 13,000 criminal minors; in 1891, 36,000. The proportion of juvenile offenders under 21 to adults seems to keep about the same,[18] 18 per cent.; the criminals per 100,000 of the population increased from 601 in 1835, to 991 in 1880, a third more.[19]

There are four classes of detained children:[20] (1) those accused; (2) those sent under parental correction; (3) those acquitted, but not returned to their parents; (4) those condemned. Of the latter, those under 16 who acted without discernment, may be either acquitted and returned to their parents, or sent to a house of correction or penitentiary colony. Of the latter it is allowable for some to be set free under the care of one of the numerous "Sociétés "de Patronage," if likely to reform, but subject to recall for bad behaviour. If the accused acted with knowledge, he must be sentenced to imprisonment for a third to one-half the term given to adults for similar offences. Those sentenced to less than six months' imprisonment spend it in a local prison (few of these are cellular, hence there is great contamination); over six months and less than two years, in a distinct quarter of a Government penitentiary colony; those sentenced to over two years and any insubordinate inmates at penitentiaries are sent to Eysses, from which adults have now been removed. Girls are sent to penitentiaries. Since March, 1891, sentences on first offenders may be suspended and are annulled if no fresh offence occurs within the next five years, otherwise the two sentences must be worked out separately. Moral, religious, and trade instruction must be given to juvenile offenders (law, 1850). In one institution, however (Montesson), the experiment is being made of a compulsory abolition of all religious instruction. Under the "correction paternelle" children may be sentenced to imprisonment for a short term or to a correctional institution.[21] Since the law of conditional conviction was adopted in 1891, some 16,000 cases have been annually dealt with, and only seventeen per 1,000 have been reconvicted.[22] France started reform work earlier than England; Mettray was opened in 1839, and the "colonies agricoles" for juvenile offenders in 1850; of the latter, there are five, and of those dismissed from Mettray, it is said that only 4 per cent. relapse into crime. There are thirty-three "dépôts de mendicité" in France for vagrants and beggars, whose numbers have risen from 22,011 in 1881-85, to 51,404 in 1886-90.

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[16] I am deeply indebted to M. Thiry for his kindness in sending me numerous volumes relating to Belgian criminal law.

[17] "Dictionnaire de pedagogie."

[18] "La nouvelle révue," Fevrier, 1896, M. Bonjean.

[19] Dr. Getz.

[20] M. Pinbaraud, chairman of prison inspectors.

There are three reformatories for boy offenders under 12, all under the care of women; that at Frasnes-le-Chateau, under an Alsatian sisterhood, has proved wonderfully successful. Want of space compels me to omit all detailed description of these and other institutions, but a most interesting account of them may be read in the report by Mr. Ruggles-Brise and Mr. Spearman of the International Penitentiary Congress (Paris, 1895). The new institution at Montesson for 400 boys is intended to replace La Petite Roquette, hitherto the children's prison. Committees for the defence of juvenile criminals have now been established and are doing much good. M. Roussel[23] considers the increase in juvenile criminals as largely due to the increase of alcoholism, for the children of drunken parents inherit vicious tendencies, have peculiarly precocious criminal instincts, together with an absence of resisting power.

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[21] "Bulletin des loi."

[22] "Statistique penitentiaire."

Germany.

In Germany and Hungary children under 12 are not accounted responsible for a criminal act, and may not be prosecuted, though they may be sent to reformatories, public or private, or to private families.[24] Those from 12 to 18, who on trial are convicted of crime, but are found to have acted without discernment, must be acquitted, and no conviction may be recorded against them, though they may be sent to reformatories; more often, however, they are boarded out. If they acted with knowledge, their punishment is lighter than that given to adults, and for slight offences a reprimand only is given; they may not be deprived of their civil rights, nor subjected to police surveillance. General directions were given as to the establishment of reformatories by the law of 1871, but in 1876 the various States were empowered to take measures for the reformation of juvenile delinquents, the establishment of educational and corrective institutions, &c. Neglectful parents may be deprived of their rights. Special laws were passed in Prussia in 1878, and Baden more recently. Unhappily both adult and juvenile criminals are increasing faster than the population; the former increased 20 per cent., and the latter 32 per cent. between 1888 and 1893. There are now some 400 reformatories in Germany—320 are Protestant. For want of space I am unable to give further details as regards Germany.

Austria.[25]

No special procedure with regard to juvenile offenders is recognised in Austria; offenders under 10 years of age are left for the parents to deal with, while the criminal acts of those 10 to 14 years old are punishable only as misdemeanours; misdemeanours and slight offences being dealt with at home, or, under special circumstances, by the police authorities. In the latter case the offender, if under 15, may be sent to a reformatory; here special care is given to the moral and religious training as well as to industrial occupation. Detention may be for as long as appears necessary, but not beyond 20 years of age. In places where no reformatory exists, the child may be sent to a private institution or to a division of a compulsory labour establishment exclusively set apart for juveniles, so long as the sentence will be completed before the delinquent has attained his twenty-fourth year. In 1895, out of 5,441 imprisoned persons, 714 were between 14 and 20 years old. There are special establishments for juvenile beggars and vagrants, who, since 1885, may be detained till they are 20, and must be given moral and religious education, and also taught a trade. Statistics are incomplete, no record being kept of slight offences.

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[23] "L'Enfant à tendences criminelles." M. Roussel.

[24] Rein. "Encyklopædisches Handbuch der Pædogogik," 1898.

[25] Information kindly supplied to me by Sir H. Rumbold, of the British Embassy, Vienna.

Switzerland.

When a juvenile criminal, over 16 but under 18, is found to have a criminal disposition and tendencies excluding him from the house of correction, the ordinary penalties of his crime, but in a modified form, must be undergone. The law of November, 1891, allows the Conseil d'État to add to the short imprisonment ordered by the court, detention for one or two years, when the criminal, being under 20, appears to be morally abandoned, and to require the restraint of a correctional institution. In this case the imprisonment takes place at Trachselwald. It is stated that 30 per cent. of the juvenile criminals are orphans or illegitimate, and most have been badly taught. The request of the Trachselwald authorities for power of provisional detention where the home influences are bad, was unanimously adopted by the Commission on Prisons, after being submitted to the police. The detention is as yet almost too short to be reformatory. The cost of detention is met in part by the communes; when the parents are able to support the child, but negligent, they lose control and must pay part of the cost on penalty of removal to a house of obligatory labour. The number of juvenile delinquents under 20 has increased to 120.[26] The criminals in 1892 were:—

Men.	Women.	Total.
1,816	385	2,201

Age.	Boys.	Girls.	Percentage of Total.
Under 16	8	2	—
" 17	18	4	1
" 18	27	4	2
" 19	36	5	2
" 20	47	9	3

Of the total convicted (3,142 in 1892), 45 were under 16, 43 under 17, 81 under 18, 83 under 19, and 96 under 20. Of those released, imprisonment was successful in at least 42 per cent. (probably 48 per cent.), and failed in 20 per cent. (see Table A, p. 212). As each of the twenty-five cantons composing the Swiss Confederation (population about 3 millions) regulate their own internal affairs, and make their own penal and penitentiary arrangements, great differences exist, and it is impossible to enumerate all the laws relating to juvenile criminals, while few publish any judicial statistics, and some cantons simply give admonition to juveniles. Those of the canton of Berne[27] must therefore suffice as an example.

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[26] Statistique pénitentiaire Suisse. Le paupérisme en Suisse.

The house of correction at Thorberg, opened in 1849, was used for juvenile criminals, vagabonds, &c., as well as for adult beggars, and idlers (for whom it was originally intended), until it was burnt down in 1867. Various attempts were made to separate juveniles and adults in Thorberg, by placing the former in a special scholars' class (1854); but after the fire it was decided that juveniles *under* 16 convicted of crime should be sent to the reformatory of Landorf or Aarwanger, Thorberg being reserved for those juveniles *over* 16 not previously imprisoned. Various difficulties prevented the separation from being carried out; for example, those learning industries or employed in field work were in contact with adult criminals, many of whom were habitual offenders, while the meals and dormitories were had in common. After-results showed how injurious this was, and situations could hardly be found for those leaving, so bad was their reputation. Thus one lad committed for vagrancy to Thorberg when 11, was recommitted within two months of his release, and by the time he was 18 had been convicted of thieving seventeen times, and since then up to the present time has spent fifteen years in prison thus costing 3,000 frs. (at 200 frs. a year) for his maintenance, not to speak of the judicial expenses, and as he is now only 44, may be a still further cost. A quarter of this sum might have saved him had it been wisely spent on education. At last, in 1891, it was decided to open a special house of correction at Trachselwald for young delinquents. To this may be committed:—Young people from 16 to 20 years old, committed by administrative authority at the request of parent, guardian, or the court, and those convicted on trial, unless sent to a penitentiary; also young people under 16, if convicted of crime, whose period of detention would extend beyond their sixteenth year. A farm was bought, altered and opened in 1892. On 1st January, 1892, there were 24 juvenile criminals under 20 in the canton; during the year 1892, 49; in 1893, 47. 26 per cent. of those under 20 were sent to Trachselwald, 47 per cent.

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[27] Les jeunes délinquents dans le canton de Berne.

of those under 18, and 53 per cent. to penitentiaries. 34 per cent. of those at Trachselwald were orphans, as were 25 per cent. of those at the penitentiaries; 12 per cent. were illegitimate. Education was defective in 56 per cent., and bad in 41 per cent., at Trachselwald; 55 per cent. and 8 per cent. respectively of those in penitentiaries. It has been proved that a short imprisonment has no deterrent effect on juvenile criminals, it merely familiarises them with criminals and their ways, and makes it extremely difficult for them to return to honest occupation; moreover, a short detention cannot reform those whose training and education has been defective—the sentences are far too short. Recent inquiry showed that half, both of the boys and girls in all correctional establishments for juvenile delinquents, had drunken parents.

The earliest establishment for correctional education—corresponding somewhat to our industrial schools—was opened in 1826 in Schaffhausen, the latest in 1894, in St. Gall. There are 31 altogether in thirteen cantons (2 are colonies agricoles); only 2 have over 60 beds, most are small with under 50 inmates. Other than criminal children are received, some are taken at the parents' request, some because they are destitute, but too old for the many homes for this class. There are 5 disciplinary schools, like our reformatories, in Aargau, Berne, Vaud (2), and Zurich; 30 penitentiaries, mostly with the cellular system, and 18 much smaller houses of correction. There are many societies and homes for neglected and destitute children and orphans; the earliest were opened in 1786 in Basle, and 1757 in Berne. These are nearly all quite small, with under 50 beds, only 11 have over 100.[28]

The general opinion among those able to judge is, that juvenile crime is not increasing, but there are no proofs one way or the other, as few cantons keep judicial statistics, others only keep them incompletely; and as the cantons differ in their laws, many juveniles might be called criminals in one place, while in another they would not have been brought before a judge, but sent to educational, not penal, establishments. No conclusions can therefore be drawn, but the following figures were kindly sent me by Dr. Guillaume:—

*Juvenile Criminals in Ringweil, Zurich.**

Years.	Annual Average.	Population.	Proportion per 100,000.
1889-93	37	352,491	10·5
'94-98	46	386,017	11·9

* Dr. Guillaume, Bureau fédéral de statistique de Suisse.

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[28] Legislation de secours publics et statistique de l'assistance officielle. Armenwesen des Kantons Bern.

Juvenile Criminals in Disciplinary Schools. Vaud.

Years.	Des Croisettes, Vaud, for Boys.	Mondon, for Girls.	Population.	Proportion. (Boys only.)
1889-93	50	17	250,910	19·9
'94-98	40	20	261,656	15·3

Tribunals are, however, more severe now. A mere fault formerly is now a misdemeanour. It is difficult, Dr. Guillaume remarks, to draw the line between a criminal and a neglected child. Why should a child merely because it is brought before a judge be accounted a criminal? Many escape this if the parents undertake to put them in an establishment with efficient supervision, even though equal offenders.

The total in reformatory and correctional establishments[29] on 1st January, 1895, were: girls 282, boys 1,011, total 1,293; 180 had to be refused for want of room. Nearly all who left were sent to situations or apprenticed.

At Lausanne[30] there is a solidarity for the purpose of aiding neglected children, withdrawing them from injurious surroundings, &c. Government aid is given to private societies in the canton of Vaud. Out of a total of 17,744 paupers in Berne in 1895, 7,602 were children, but only seven were in the poorhouse, and 5·4 per cent. in institutions; 59 per cent. were boarded out, and this proportion is increasing.

At Aarbourg, in Argovie, there is a place of correction for fifty-six juvenile criminals, as decreed in 1893. This institution (called by the simple name of Zwangserziehungsanstalt) receives (*a*) criminals under 18 condemned by the court and sent here to receive a reforming education. Under special circumstances, and in individual cases by the Conseil d'État, the age of admission may be raised to 20 years; (*b*) juveniles 18 years old or under, who are morally neglected, and who, though not condemned and deprived of liberty, require a period of residence in a correctional house. The age may be extended to 20 in this case also.

Various penal reforms are now being carried out in Switzerland, and point to the need of more correctional houses. Among these reforms is one that no proceedings can be taken against a child under 14 completed years at the time of the misdemeanour. Where a child is abandoned or corrupt and in moral danger, the administrative authority is empowered to take necessary measures. In Berne, any convicted child under 14, instead of prison, may be committed by the magistrate to a home, and be thence adopted or apprenticed.

[29] Die Rettungs- und- Zwangserziehungsanstalten.

[30] "Revue Philanthropique," May, 1898.

Reprimand in Vand is much employed. For those under 14 there is no punishment for crime, but they may be given in charge to the State, and the State may return them to the parents, or, if considered better for the child, take other measures for his reform and education by sending him to a house of correction, a family, or an educational establishment up to the age, at most, of 21. The numbers committed to correctional institutions show no diminution—all such establishments are full.

The places of detention are not governed by hard-and-fast rules, but by the character and circumstances of each individual case. In the case of a child from 14 to 18 condemned for crime, the judge examines his mental and moral state; if both are undeveloped, he comes under the Code already cited, and proceedings cannot be taken. If of full understanding, and disciplinary measures are required, the child may be sent to a house of correction for juveniles for from one to six years, but in no case beyond his majority. Thus gradually a barrier is being placed to check the beginnings of a criminal course by—(1) Providing better education for morally neglected children, and sending negligent parents to houses of correction, or making them liable for their child's maintenance. (2) Placing morally abandoned children in houses of correction first, in families afterwards. (3) Sending vicious children to reformatories. (4) Sending juvenile criminals to Trachselwald. The law needs more fully to distinguish between minors who need education, and adults who need punishment. It is hoped that a federal penal code will soon become law.

Prisoners in Switzerland, 1889-98 (31*st December*).*

Années.	Condamnés.			Total Condamnés.	Non-condamnés.			Total Non-Condamnés.
	Criminels.	Correctionels.	Maison de travail et de correction.		Prévenus.	Détenus en transport.	Mendiants et vagabonds.	
1889....	1,495	809	476	—	451	33	117	—
'90....	1,456	861	521	—	512	90	168	—
'91....	1,347	753	561	—	644	114	175	—
'92....	1,405	775	781	—	661	99	173	—
'93....	1,364	812	851	—	678	141	202	—
'94....	1,309	776	775	—	542	162	157	—
'95....	1,361	741	805	—	582	90	107	—
'96....	1,400	824	717	—	496	124	133	—
'97....	1,413	808	722	—	525	120	157	—
'98....	1,458	810	740	—	566	67	97	—
'98....	—	—	—	3,295	—	—	—	774

Note.—Total prisoners, 31st December, 1898, were 4,069; in 1888, 3,895. There is an increase in numbers in correctional institutions, but a decrease in criminals in proportion to the population.

* From "Statistik der Bewegung der Gefängnisbevölkerung."

Sweden.

In 1890 Sweden[31] revised its criminal laws, especially as regards juvenile criminals. I regret I have been unable to obtain fuller particulars of these. It has been frequently stated that juvenile crime is decreasing in Sweden, but my statistics do not confirm this statement. The last decade shows a great increase of prisoners under 20 sentenced to hard labour, although the new law of 1890 much modified the punishment. Theft with mitigating circumstances may now be punished by imprisonment; previously hard labour had to be awarded in every case. The age of young offenders is considered a mitigating circumstance, and their punishment is more often imprisonment only, than with older offenders.

The rapid increase of convicts, both adults and juveniles, during the last decade, is partly on account of the change from hard labour to imprisonment. For smaller crimes usually punished by imprisonment the number of juvenile criminals is increasing considerably, though not quite regularly; this increase is both absolute and in proportion to the total number of criminals. There is an official in every district to look after neglected children.

Fines may be awarded to younger criminals for minor infractions of the criminal law. Statistics are not available on this point, but it is believed they also show an increase.

The following table was kindly furnished to me by the Swedish and Norwegian Minister:—

Juvenile Criminals sentenced to Hard Labour, and percentage to Total Convicts under same sentence each Year.

Year.	Total Convicts (Hard Labour).	Under 14 Years of Age.	Percentage.	15 Years of Age.	Percentage.	16 Years of Age.	Percentage.	17 Years. of Age.	Percentage.
1887	1,619	—	—	24	1·48	42	2·59	59	3·64
'88	1,508	—	—	14	0·93	27	1·79	43	2·85
'89	1,580	2	0·13	18	1·14	28	1·77	59	3·73
'90	1,487	1	0·07	12	0·81	30	2·02	46	3·09
'91	1,599	2	0·13	12	0·75	37	2·31	55	3·44
Total for five years...	7,793	5	0·06 (avge.)	80	1·03 (avge.)	164	2·10 (avge.)	262	3·36 (avge.)
1892	1,640	—	—	13	0·79	40	2·44	53	3·23
'93	1,732	1	0·06	19	1·10	48	2·77	60	3·46
'94	1,782	—	—	30	1·68	52	2·92	62	3·48
'95	1,837	1	0·05	19	1·03	58	3·16	70	3·81
'96	1,833	—	—	23	1·25	42	2·29	65	3·55
Total for five years...	8,827	2	0·02 (avge.)	104	1·18 (avge.)	240	2·72 (avge.)	310	3·51 (avge.)

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[31] Translation from the report presented to the Royal Commission (Sweden) appointed October, 1896, to examine methods for the better education of juvenile criminals.

Number under 18 *Years of Age sentenced to Imprisonment without Option of a Fine, and the percentage, compared to Total sentenced to Imprisonment.*

Year.	Total Convicts of above Class.	Under 14 Years of Age.	Per-centage.	Under 15 Years of Age.	Per-centage.	Under 16 Years of Age.	Per-centage.	Under 17 Years of Age.	Per-cent-age.
1888	618	1	0·16	3	0·49	5	0·81	14	2·27
'89	669	1	0·15	3	0·45	9	1·05	22	3·29
'90	742	1	0·13	6	0·81	24	3·23	36	4·85
'91	812	2	0·25	18	2·22	16	1·97	17	2·09
'92	797	1	0·13	6	0·75	21	2·63	24	3·01
'93	777	4	0·51	10	1·29	12	1·54	26	3·35
'94	936	2	0·21	15	1·60	25	2·67	28	2·99
'95	877	—	—	12	1·37	11	1·25	35	3·99
'96	950	—	—	8	0·84	24	2·53	26	2·74
'97	1,131	1	0·09	10	0·88	27	2·39	43	3·80
Total........	8,309	13	0·16 (avge.)	91	1·10 (avge.)	174	2·09 (avge.)	271	3·26 (avg.)
Average during decennial	830·9	1·3	—	9·1	—	17·4	—	27·1	—

Norway.

Children are not accountable for crime under the age of 10. Juvenile criminals from 10 to 15 years old may be placed in schools, industrial or other. The Poor Law Board may decide where the child shall be placed, whether in reformatory or industrial school, &c. This board, however, does not act on its own initiative in removing children from moral danger, but only when appealed to by the School Board. 717 were taken from their parents in 1892.

There were[32] in—

	Criminals under 15.			15—18 Years old.			Total under 18.
	Total.	Boys.	Girls.	Total.	Boys.	Girls.	
1860...........	61	—	—	144	—	—	205
'61...........	131	—	—	182	—	—	313
'67...........	203	—	—	221	—	—	424
'71...........	168	—	—	255	—	—	423
'81...........	358	—	—	367	—	—	725
'83...........	325	—	—	336	—	—	661
'85...........	206	—	—	345	—	—	551
'87...........	296	—	—	330	—	—	626
'89...........	467	—	—	380	—	—	847
'95*	93	82	11	674	579	95	767
'96...........	108	98	10	735	645	90	843
'97†	154	108	12	807	723	84	961 (12,496 adults)

* "Norges Officielle Statistik," 1897.

† Of the 154 criminals under 15 in 1897, Christiania and Bergen supplied 113; and of the 807 from 15—18, 445. Other parts of Norway only 41 and 362 respectively.

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[32] Udkast til Lov. Dr. Getz, Chairman of the Penal Law Commission. Statistik Aarbog for Kongeriget Norge.

The towns supply an increasingly large proportion of these youthful criminals. In—

1867	there were	250	in towns to	174	in country districts
'81	,,	496	,,	229	,,
'89	,,	665	,,	182	,,

Of the 665, no less than 307 were convicted in Christiania.

The new law proposes to remove juvenile delinquents under 16 and place them in corrective establishments, homes, or private families, if they have committed punishable acts showing depravity, or when morally neglected or too badly behaved for ordinary school discipline, or when their removal appears necessary for their improvement and likely to prevent a repetition of such acts.

Denmark.

New laws as regards the treatment of neglected and criminal children are now under consideration in Denmark. At present juvenile offenders come under the ordinary penal code (the age of responsibility is fixed at 10), and there are no special laws regarding them, hence children may be sent to prison. Private institutions for neglected children are aided by the State.

There were[33] criminals—

	1885-94. (Total.)	1895.	1896.
Men	28,544	2,921	3,009
Women	10,453	1,024	994

Of these there were, from 10 to 14 years old—

Boys	4,937	495	557
Girls	1,355	114	127

or an average of—

36·04	criminal men per	10,000	of the population
12·28	,, women		,,

And from 10 to 18 years old, in the towns—

67·97	criminal boys per	10,000	of the population
19·53	,, girls		,,

Ditto, in the country—

13·19	criminal boys per	10,000	of the population
3·35	,, girls		,,

that is in proportion to the population at that age.

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[33] Information kindly sent to me by the director of the Statistical Bureau, Copenhagen.

Denmark is the only country where whipping may be given to girls under 12, it may also be given to boys up to 15 or even 18 years old in certain cases. Juveniles under correction may be hired out to neighbouring farmers by the day from institutions, and the plan seems to have worked well for years. It accustoms the boys to liberty gradually; those who are badly conducted are sent back to the reformatory.

Holland.

Juvenile criminals are said to have doubled within the last twenty years.

Of convicted juvenile offenders, there were in 1897, 666 persons under 16; of these 584 were boys and 82 girls, sentenced without right of appeal, for misdemeanours. The proportion to the total number of convicted of both sexes was 4 per cent. and 5 per cent. respectively. There were also sentenced for various crimes, 4,535 boys and 368 girls under 16, or 5 per cent. and 4 per cent. of either sex respectively. By prepayment of the maximum amount of fine, accused persons may avoid prosecution; 44 boys and 6 girls, or 3 per cent. and 2 per cent. respectively of the men and women, availed themselves of this privilege; 200 juvenile offenders were exempted from prosecution, of whom 151 were sent to Government reformatories in 1897; 20 were girls, the rest boys. In 1838 the proportion was 1 juvenile criminal to 35 adults, the proportion now is higher.[34]

Dutch criminal law only recognises two classes of offences: infractions, or délits, that is offences done intentionally; the punishment for these is imprisonment for one day to fifteen years, and contraventions or offences (the kind makes no difference) done unintentionally. The punishment for this class is a fine or imprisonment for one day to one year. Children are accounted responsible after the age of 10; under that age they may not be prosecuted for a crime, though, if they have committed an act deserving imprisonment, or if beggars, &c., they may be placed by the judge, at the request of the minister, in a State educational establishment till they are, at most, 18 (1886 law).

Imprisonment may be awarded to juvenile offenders if they have acted with knowledge, but youth counts as an extenuating circumstance. Separate parts of the prison are assigned to juveniles, and solitary confinement is not allowed to those under 14, but up to this age they must be confined with prisoners of the same age. While under detention, however, the mixture of adults and juveniles is possible, in fact solitary confinement is then only awarded by special request.

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[34] H.M. Ambassador at The Hague was good enough to procure me these facts.

Imprisonment in Holland can never be for more than fifteen consecutive years.

NORTH AMERICA.

Canada.

The following law, which applies to the whole Dominion of Canada, was passed in 1894 in order to separate juvenile from older criminals during trial, and also with a view to providing places of reformation for them. Those under the apparent age of 16 are to be tried privately, without publicity, separately and apart from other offenders. If arrested under warrant or committed to custody, they must be kept in custody, pending or after trial, apart from older offenders and persons waiting trial, and not in lock-ups nor police stations, nor in any place with ordinary criminals and prisoners, nor with older persons charged with crime. If it is necessary to remove the child from his home, he may be legally committed to the care of the Children's Aid Society or to the Office of Neglected Children temporarily, or he may be committed to an industrial school until 18, if a constant offender. A special Commissioner may be appointed by the Lieutenant-Governor to try children under 16.

The following laws apply in full to the province of Ontario only, though parts have been lately adopted by other provinces. *Ontario, Canada.*[35]—In consequence of the Royal Commission on Prison Reform and Crime, appointed in 1890, the Children's Protection Act of 1893 was passed, for the Government decided that it was more important to deal with neglected children drifting into crime than even to reform the prisons. Under this Act all towns *must* have Children's Aid Societies (this term includes all incorporated societies for the protection and care of children) and officers to put the Act into force. These officers act as constables, and may apprehend without warrant boys under 14 and girls under 16, if found begging, thieving, sleeping out, wandering, without proper home or guardianship, associating with drunkards, or growing up neglected or without education. If a child is dependent or neglected in any of these ways, or in danger as regards health, morals, or life, through the misconduct or intemperance of his parents, the judge may appoint the Children's Aid Society legal guardians, with power to place out the child till he is 18 or during minority. About 600 are now so placed out, and the demand for the children is greater than the supply. If unsuitable for this by reason of depravity or immorality, the child may be sent to an industrial school, refuge, or suitable society authorised and willing to receive and take charge of him or her for two years, and may then be transferred to the Children's Aid Society till the age of 18. The Children's Aid Society is the legal guardian, and is bound to see that the child is educated, has a suitable home, and is taught an industry. Notice must also be given to this society when any boy under 12 or girl under 13 is accused of any offence. The agent must then investigate the case, examine the home surroundings, &c., and advise the judge at the trial. If it appears desirable for the child's welfare and for the public good he may, instead of being sentenced, be (1) returned to the parents; (2) bound over till he is 21 or less to some responsible person; (3) placed out in a foster home; (4) fined not more than $10; (5) placed under suspended sentence; (6) if wilful and unmanageable, be committed to an industrial school, reformatory, or refuge, according to the special case. The religion of the child and his parents must be respected by sending him to a person or institution of the same religion. Houses and societies taking children under this Act must submit to inspection by duly authorised persons. The Lieutenant-Governor may appoint a person as superintendent of neglected and dependent children, his salary to be paid by a vote of the Legislature; part of his duties are to see to the carrying out of these laws.

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[35] Laws of Ontario dealing with neglected and dependent children. The last revision was published in February, 1898, by Mr. J. J. Kelso, superintendent of the Department of Neglected Children.

Towns of over 10,000 inhabitants are to have temporary shelters quite distinct, and at least half a mile distant, from penal and pauper establishments and persons; convicts and paupers may not live or work there. Homes for children, or even private families, may be used as such shelters for children aged from 3 to 14 coming under this Act. This provision is not yet, however, fully carried out in the province. The judge may order the municipality from which the accused child comes to pay $1 a week till the boy is 14 or the girl 12; this amount may be recovered from the parent, who must also pay such further sum as the judge orders. Children coming under this Act may remain under the control of the Children's Aid Society till they are 21 if necessary, but if likely to be for the good of the child, he may be restored temporarily or permanently to his parents or relatives. Unless so ordered, the society retains control, even where the parent contributes; and if restored, the court may order the parent to pay the past cost of maintenance.

Children under 14, instead of being sent to prison, may be sent to a home for neglected children, to be therefrom adopted by, or apprenticed to, suitable persons, parents having no right to interfere, except by permission of the minister. Separate provision must be made for the custody and detention of juvenile delinquents, by providing distinct premises, or other suitable arrangements, and their trial must be held in separate premises, or in the judge's private office, or, if this is not possible, then in police courts, but not until two hours after all other trials are over (Act of 1887). Children under 12 may be taken to, and tried in, the shelter of the Children's Aid Society if suitable, or, in charges of cruelty, in the child's own home. All persons, except those immediately concerned, and the Children's Aid Society, must be excluded from the place of trial in all trials for cruelty and those of children under 16 years of age; newspaper reporters, &c., are not given admission, nor spectators. Thus in 1898 there were 1,306 complaints under the Children's Protection Act; of these, 878 came before the Children's Court in Toronto; 66 children were taken to the shelter when arrested, instead of to jail, and 98 while on remand.[36] 270 were temporarily cared for in 1897, and 790 juvenile delinquents tried; 73 were sent to industrial schools. Many were dismissed after a warning or a week's detention in the shelter or elsewhere, as this is often found sufficient to effect a reform. The work therefore is preventive largely. The great benefit of these laws lies in the fact that the Aid Societies are semi-official bodies, with constabulary powers in rescuing and searching for children. Most private philanthropic efforts in Canada are State-aided, but this society forms almost the only exception, and receives no Government grant. It must, however, attend to all neglected children coming under this Act or under the Criminal Code of Canada, and also attend the trials of all children under 16, to assist and advise the magistrate. The society further investigates complaints of cruelty, &c., and receives truants and incorrigible children, &c.

There is a marked decrease of crime, both adult and juvenile, in Canada, or rather in Ontario, judging by the committals to prison, whether those to the common jails or the central prison, Toronto, and also by the committals to reformatories. Only five times since the latter was opened have there been so few committals as in 1897, when they numbered 598; of these 26 were under 18, and 51 from 18 to 20 years old. The detention given is longer now than formerly. 1893 and 1897 had the fewest committals to prison since 1874, and the fewest boys under 16, as may be seen from the following tables:—

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[36] Reports of the Superintendent of work under the Children's Protection Act, 1897-98.

Prisoners Committed to Jails in Ontario.

[From "Annual Report of Inspector of Prisons and Public Charities for 1897."]

Year.	Number of Prisoners.				
	Men over 16 Years of Age.	Boys under 16 Years of Age.	Women over 16 Years of Age.	Girls under 16 Years of Age.	Total.
1869	3,599	294	1,680	82	5,655
1870	4,215	319	1,737	108	6,379
'71	4,586	329	1,642	58	6,615
'72	5,006	281	1,615	56	6,958
'73	5,745	323	1,735	74	7,877
'74	7,298	377	1,746	67	9,488
'75	8,048	389	1,566	70	10,073
'76	9,005	434	1,727	70	11,236
'77	11,053	542	1,824	62	13,481
'78	9,537	480	1,959	54	12,030
'79	8,995	416	1,756	53	11,220
1880	8,229	549	1,863	59	11,300
'81	7,007	468	1,681	73	9,229
'82	7,236	522	1,750	62	9,620
'83	7,858	423	1,551	48	9,880
'84	9,858	458	1,719	46	12,081
'85	9,419	450	1,507	50	11,426
'86	8,831	352	1,424	38	10,645
'87	8,996	409	1,574	38	11,017
'88	10,060	551	1,778	65	12,454
'89	10,349	451	1,685	46	12,531
1890	9,622	461	1,677	50	11,810
'91	8,469	421	1,501	32	10,423
'92	7,177	446	1,335	53	9,011
'93	6,798	388	1,399	34	8,619
'94	7,785	278	1,350	37	9,450
'95	7,912	284	1,154	30	9,380
'96	7,622	265	1,147	24	9,058
'97	7,533	235	1,069	47	8,884

The highest number of girls committed was in 1870; the lowest in 1896.
,, boys ,, 1888; ,, 1897.
The population of Ontario is 2,114,321 (1891); of Toronto, nearly 200,000.

Committals to Boys' Reformatory, Ontario.

[From "Annual Report of Inspector of Prisons and Public Charities for 1897."]

Year.	Yearly Committals.	Number Present at End of Year.	Year.	Yearly Committals.	Reprieved.	Number Present at End of Year.	Average Number of Inmates.
1867....	55	170	1882....	84	—	263	—
'68....	59	173	'83....	58	—	245	—
'69....	47	170	'84....	81	—	242	—
			'85....	51	—	220	—
1870....	41	193	'86....	64	—	205	—
'71....	48	155	'87....	60	—	192	—
'72....	48	158	'88....	71	—	193	209
'73....	31	130	'89....	85	—	210	205
'74....	51	139					
'75....	71	173	1890....	63	32	201	178
'76....	47	183	'91....	63	31	185	170
'77....	75	195	'92....	67	38	168	—
'78....	69	196	'93....	62	16	173	158
'79....	57	206	'94....	51	11	152	150
			'95....	57	21	147	—
1880....	80	216	'96 ...	55	22	145	150
'81....	96	250	'97....	37	24	123	132

Average number of inmates, 134 in 1898.

Lowest average, 132 in 1897; highest, 263 in 1882.

The population of Ontario is 2,114,321 (1891); of Toronto, nearly 200,000.

Thus between 1877 and 1897 there has been a great and fairly steady decrease in committals to prison throughout Ontario, in spite of an increasing population; in 1877 there were 13,481, in 1897 only 8,884; the juvenile commitments were 3·2 per cent. of the total. The highest number of girls committed was in 1870 (108), the lowest in 1896 (24), but in 1897 47. Of boys under 16 most were committed in 1877 (542), and in 1888 (551), fewest in 1897 (235). The committals for drunkenness also show a rapid falling off. In fifteen years they have decreased to nearly a fourth, 1,716 in 1897, as against 4,777 in 1882.

The marked diminution in juvenile crime is partly attributed to the various child-saving agencies (preventive work), partly to the system of giving suspended sentences, as these give a merely thoughtless lad an opportunity to reform, partly to the private investigation made before the magistrate; no doubt this removes the romance, excitement, and notoriety of police court trials, which have such evil consequences elsewhere. Many lads simply drift into crime and idle ways without any actual criminal inclination.

Vagrants have also diminished, the committals only average 56 a year for the last three years, where previously they were 121. Of the total committals to jail, 14 per cent. were uneducated, 67 per cent. were intemperate. At all ages there is great anxiety to learn.[37] Of all the committals 220 were discharged on probation or suspended sentence. The committals to the reformatory show a steady decrease also. In London, Ontario, with a population of about 40,000, there were only 60 juvenile delinquents in 1898. The municipalities from which the committed children come may be ordered to pay $2 a week. I may add that a byelaw ordering a curfew bell to be rung at a certain hour (9 p.m. usually), after which children may not play about the streets, has been passed in fifty towns, and has worked well where enforced.

The whole number of children in certified corrective institutions in the province in January, 1899, was but 350 (the population is over two millions), distributed thus: Ontario Boys' Reformatory, 120; Victoria Industrial School for boys from 10 to 14 years old, 115 inmates; St. John's Industrial School for Roman Catholic boys of the same age, 42 inmates; total boys, 277. Ontario Refuge for girls, 45; Industrial School for girls 10 to 14 years old, 28; total girls, 73.

Toronto has three certified industrial schools for juvenile delinquents 10 to 14 years old. The Victoria Industrial School has received 586 children altogether; 49 were committed in 1898 for larceny, truancy, &c.

The sentence of boys to the reformatory which receives delinquent children *over* 13 is sometimes for a wholly indefinite period, or for an indefinite period not to exceed three or five years; the minimum being three to six months, the maximum six years. The crimes of the boys committed to it were chiefly larceny, house-breaking, &c. The average detention is some seven-and-a-half months; this is found too short for permanent reform in many cases, though it is claimed that 75 per cent. are reformed and do well subsequently. The average age is 14 and 15, one was 11, and one 18 years old. Average cost $225 per head. Efforts are made by careful classification to prevent contamination in the reformatory, and reform is tested by conditional liberation; thus 33 were so released (24 reprieved, 9 apprenticed) in 1897, and 27 in 1896, before their sentence had expired, as a reward of good conduct. In three years only one boy has needed to be transferred to prison from the reformatory. The inmates numbered 147 in 1896, and 123 at the close of 1897, as compared with 263 in 1882.

The committals to the girls' reformatory were 97 in 1897; of these 22 were sent to jail first; the total inmates for the year were 169, the average 59, but only 10 were under 18 years old; 15 were 18 to 20 years old, the rest considerably older, so that the name is somewhat misleading. The girls' industrial refuge is for younger delinquents, from 13 to 16 years old; 2 however were under 13, 4 were 13; 8, 14 years old; 3, 15; and 5 were 16 years old; previously they were admitted much younger, 11 and less; the average age is 14, and the detention is from six months to three years; also for an indefinite period in some cases, but not to exceed five years. Theft, vagrancy, and uncontrollability are the chief crimes for which these girls are committed to the refuge; to the reformatory mainly for drunkenness, larceny, &c.; here the average sentence is eight months, and the complaint is made that this is too short. The majority, however, do well on leaving, and all those sent out last year from the refuge were doing well.

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[37] "Annual Report of Inspector of Prisons and Public Charities," Ontario, 1897.

By the Industrial School Act, school boards may aid these schools with grants, by payment of teachers or of fixed sums. Children found begging, with criminal or drunken parents, convicted of petty crime, or expelled from schools may be sent by the judge to such schools till they are 16 or less. Juvenile offenders under 13 may also be sent till they are reformed, instead of being imprisoned, but not beyond the age of 17, and when fit to be discharged either on probation or permanently, they may be apprenticed, &c. If their presence is injurious to the school, they may be transferred to the reformatory. The industrial school authorities, while retaining control till the child is 18 if necessary, have ample powers to board out inmates or return them to the parents or relatives if suitable. Parents may be ordered to pay up to $1·5 a week. There is a splendid reformatory at Penetanguishene, Ontario, for delinquent boys from 13 to 16 years old when committed; for many years this was really a prison; now this is changed, and it is a real reformatory, and one of the sights of Ontario. Here, too, the inmates are decreasing. Of course in all these schools the *per capita* cost is considerably higher when the inmates are few than when they are numerous. The decrease in numbers is not due to relaxed effort, as the officers are diligent in hunting up neglected children and trying to stop youthful wrongdoing.

In 1890 there was 1 criminal to every 4,247 of the population, a fifth of those in the United States, which had 1 in 786·5.

It is worth noting that of the many children emigrated to Canada by Dr. Barnardo, Miss Macpherson, and others, only 3 per cent. are believed to have relapsed into crime, although they belong to a class which, but for timely aid, would inevitably have drifted in large numbers into the criminal class.

The United States.

As each State in America passes its own laws, it is impossible to enumerate them all in detail or to take a general survey. Moreover, many of the States do not keep accurate statistics, or have only recently begun to do so, hence while some assert crime is diminishing, others, with apparently equally good reason, assert that it is on the increase. As a whole it is increasing, but in certain States there is a decrease. The laws of many States are excellent, but in many cases they are not carried into effect, and exist on paper only, or largely so, though undoubtedly recent years show great attempts at reform, and one or two States have introduced the most advanced and successful systems for dealing with criminals of any country in the world. Several States insist on children being tried apart from adults, either in a separate place or at a separate time; but by an irony of fate, in many of the county jails adult and juvenile offenders are locked up together while waiting trial; in one case, where separate provision had been made, the jailer stated that he had put a boy under remand in the common cell, as otherwise he would have been lonely! Even those who are only to appear as witnesses, are liable to be locked up with criminals if unable to obtain bail; in one case, indeed, the witness of a horrible crime was locked up, while the criminal, getting bail, was allowed his freedom! In another instance the criminal and the witness against him, a lad, were locked up together pending the trial. Tramps are frequently put into these county jails, and prefer them to the workhouse.[38] Glancing through the numerous reports of prison inspections kindly sent me, various oddities are seen; for example, in one place a visitor writes: "No precautions are observed. The "prisoners are allowed the liberty of the place, and doors were not "locked behind us. They prefer to stay rather than run away!" Another says: "It is understood the walls of Heaven are of "jasper, but the *floors* of the Pipestone county jail are of jasper." In another the following is given as the bill of fare, and is a fair sample of many county jails: *Breakfast.*—Bread and butter, coffee, potatoes, meat, cookies; *Dinner.*—Fresh meat, potatoes, vegetables, soup twice a week, other days pie or pudding, bread and butter, syrup, tea; *Supper.*—Coffee, bread and butter, syrup, sauce, cookies, sometimes fish and cheese! Prisoners are certainly better fed than with us, and usually get as much as they want to eat, though the *per capita* cost is less, owing to the free sale of labour, being only 22*l*., as against 35*l*. with us. The labour covers fully 30 per cent. of the cost.

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[38] Residents in Canada and the States say that at the beginning of winter there is an epidemic, so to speak, of petty offences: these are purposely committed in order to secure a warm shelter during the severe weather. I cannot wonder greatly at this: I would certainly far rather be shut up in a Dublin prison than in a Dublin workhouse.

The distinctive features of the American penal system are: (1) Their *reformatories* (for much older offenders than with us); (2) Their *probation system* (with official supervision); (3) The *indeterminate sentence;* and (4) Their *release of inmates on parole*. The fundamental idea is that every criminal is potentially a good citizen. Crime, however, is a local rather than a national concern, each State having its own criminal code and prison treatment, hence statistics of the different States are hardly comparable, the definition of crime and the penalties differ so widely. Mr. Ruggles-Brise considers the most progressive States are New York, Massachusetts, Illinois, Ohio, and Pennsylvania, to which I should add, Michigan and Minnesota. The four former have adopted the parole system, indeterminate sentence and reformatories; the sentence frequently being, "to be left till "good reason to hope for reform." As a rule criminals who have committed serious offences are confined in State prisons or reformatories; others, for slighter offences or misdemeanours, in workhouses and county jails. The minimum sentence in the former is one year. In 1890 the State prisons contained 46,000 prisoners out of a total of 82,000 (now 84,000). Longer sentences are usually given in the United States than in this country, and drunkenness is a much more serious offence. The population of the United States is some 78 millions. The prisoners in 1890 were 772 per million of the population; the average sentence is three years; crime costs 59 million dollars.[39] America early recognised that children under a certain age were incapable of crime, and has made great efforts to differentiate the treatment of juvenile and adult offenders.

The cost per head of the reformatory and industrial schools in the United States ranges from 183 dollars (in Iowa, with 400 inmates) to 358 (Missouri, 100 inmates), and the numbers vary from 100 to 782 in New York and 758 in Massachusetts. Pennsylvania State Reform School has 483, and the industrial school 400 inmates; Wisconsin 396. Where the inmates are fewer the *per capita* cost is naturally higher. As regards juvenile crime, compared with Ontario (Canada), Rhode Island has one-seventh the population of Ontario,[40] but more juvenile delinquents and committals to reformatories (171). Wisconsin, with a smaller population by one-third, has three times the number of boys in the State Reform School (396). Iowa has the same number, with a smaller population. Minnesota has half the population of Ontario, but more inmates in the State Reform School (135). Nebraska, one-third the population, but twice the number in reformatories.

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[39] Reports of State Board of Charity. State Aid Association.

[40] Report of Prison Inspector, Ontario.

Slightly over one-third, 38 per cent. of the population, in America, are of foreign birth and parentage, but 52 per cent., or more than half the criminals, are foreigners, and among juvenile criminals the proportion is higher, 61 per cent., or nearly two-thirds. Half the paupers are said to be foreigners.[41]

Percentage of Totals in each Class.

	Native Born. Native Parentage.	Native Born. Foreign Parentage.	Foreign Born.
Total population	62·5	20·9	16·6
Convicts	48·2	26·2	25·6
Juvenile delinquents....	38·9	46·4	14·7
Paupers	40·9	7·6	51·5
Prisoners........................	45·0	24·6	30·4

Under the New York penal code, destitution is an offence for which children can be brought before a magistrate.

The comparative cost of State reformatories is given as follows:—

	Number of Inmates.	Net Cost per Head.*
		$
Concord, Massachusetts	933	183
Elmira, New York	1,354	133
State prisons—		
Sing-Sing, New York	1,329	71†
Joliet, Illinois	1,419	20†
Columbus, Ohio	2,174	26†

* Mr. Ruggles-Brise, "Report to Secretary of State on Treatment of Crime "in the United States, April, 1899." Census, 1890, Dr. Wines' returns.

† These figures are low, because of labour earning.

In 1895-97 1,172 prisoners were paroled from Ohio, and the system works well. In New York parole is given as soon as it appears likely the prisoner will not violate the law when at liberty, but it is little used there; the law was passed in 1890.

As a rule in few States are parents made to contribute towards the cost of maintenance of their children, who are dependent on charity; in some they are, and are punished for neglecting to support their families.

The following table shows the number of children dependent on the public for support in various places. As delinquent children are usually classed with these, and in most of the States treated by the same method, separate statistics are not easy to obtain:—

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[41] "Century," September, 1893.

*Dependent and Delinquent Children.**

	Year.	Population.	Number Supported Annually.	Ratio to Population.	Cost in Dollars.
					$
New York City	1892–94	1,801,789	15,331	1 to 117	1,683,847
,, State........	1893	5,997,853	29,909	1 ,, 200	2,439,216
London, England	1891–94	4,211,743	20,426	1 ,, 206	—
Boston........................	'90–94	448,447	356	1 ,, 856	—
Philadelphia	1893	1,046,964	529	1 ,, 1,979	—
California	'95	1,208,130	5,409	1 in 223	312,217
Ohio	'95	3,672,316	3,600	1 to 1,000	242,554
Massachusetts	'95	2,238,943	1,311	1 ,, 1,707	130,000
Michigan	'98	2,093,889	198	1 ,, 10,400	33,000
Pennsylvania	'92	5,258,014	8,584	1 in 612	1,505,107
Minnesota	'96	1,300,000	125	1 ,, 10,468	21,900
Indiana	1890	2,192,404	3,000	1 ,, 730	214,548

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* Partly from State Public School and other reports, partly from the "American Journal of Sociology," May, 1896.

About 20 per cent. of the United States prisoners have trades; in some places only 10 per cent.

The census of 1890 showed there was an increase in the population of the United States of 25 per cent. during the ten years 1880-90; in the same time the convicts increased 27 per cent., the prisoners in county jails 25 per cent., while the inmates of juvenile reformatories showed an increase of 30 per cent. during the same period. At the National Prison Congress held recently at Minnesota, it was stated that crime had increased one-third faster than the population. The proportion of juvenile to adult criminals has been given as 1 to 7; females under 21 were 7 per cent. (in England 16 per cent.) of the total prisoners: very few females are sent to prison in America. From 1850 to 1880 criminals quadrupled (or increased 445 per cent., the population increasing 170 per cent.); from 1894 to 1897 they increased (mostly in cities) 27 per cent. These general statistics are, however, apt to be misleading—offences have multiplied, records are more carefully kept now; and a general comparison is unfair. The president of the National Prison Congress (1894) stated that in 1850 there was 1 prisoner to 3,261 people in the United States; in 1860, 1 to 1,600; in 1870, 1 to 1,021; in 1880, 1 to 837; and in 1890, 1 to 757. There are altogether 1,758 county jails, containing about a quarter of a million persons. In 1890 there were 74 prisoners under 14, and 8,984 from 15 to 19 years old.

There are some 25,000,000 children under 16 in the United States; about 100,000 are dependent on the public (average cost $100 a year), and about 15,000 are in reformatory and industrial schools (with an average of 1 caretaker to 12 children), costing $133 each, or a total of $2,000,000, besides about $10,000,000 for the buildings.[42] Eighteen of the States make legal provision for dependent children; twenty-four do not. The United States spends something like $100,000,000 a year on charity. In the southern States prisoners, even children, are still leased out as labourers; thus, out of 1,245 leased out in Georgia, 1884, 100 were boys under 16 and 400 lads from 16 to 20 years old.[43]

The American Humane Associations, at their Washington Conference in 1898, reported the work of twenty-seven associations, which had helped 32,681 children during the year.[44]

The States of New York and Massachusetts show a diminution of crime, especially among juveniles; nor must it be forgotten that New York was the very first place in the world to establish by law a reformatory for juvenile delinquents: this was the House of Refuge, opened in 1824, for both sexes from 6 to 16 years of age (now 12 to 16), accused of various crimes other than felony.

New York.

The penal code relating to children was revised and republished in 1896.[45] Under it a child under 7 is incapable of crime; one from 7 to 14 years old is presumed to be incapable, unless proof is given of his capacity to understand the act and its wrongfulness. When no certificate of age can be had, a magistrate and doctor have power to determine it. Common law presumes a child under 14 to be incapable of crime, and he must be acquitted by the jury unless proof of capacity is given. If a child under 14 has committed a crime (not murder) which would be felony in an adult, he is to be tried as for misdemeanour, and the penalty imposed is to be that prescribed for misdemeanours.

Children convicted of misdemeanour *may*, and of crime, *must* be sent to a reformatory, house of refuge, or duly authorised institution or person, such being given full legal control. When juvenile delinquents are taken before magistrates, the parents must be examined, and if found negligent, are deprived of their custody, and the children sent to institutions of the same religion as their parents if possible. A child under 16 convicted of misdemeanour shall not be sent to a prison or penitentiary for longer than is necessary for its transfer to an institution authorised to receive committed children (of which there are thirty-three in New York), and as such, receiving grants from the city authorities. A magistrate may commit temporarily to such authorised institution any child under 16 held for trial on a criminal charge, or juvenile witnesses. No child (since 1892), even if a criminal, under the real or apparent age of 16, is to be in any prison, court room, vehicle, or place of confinement in company with adult criminals. The Society for the Prevention of Cruelty to Children must bring violations of the laws before the court, and advise and assist in the disposal of the child.

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[42] Conference of Charities, Colorado.

[43] Howard Association.

[44] Humane Associations, Washington, 1898.

[45] Manual containing penal code and all statutes relating to children. Published by the Society for the Prevention of Cruelty to Children. New York.

Cases involving the trial of children are to be heard apart from trials of other cases—to have preference over others in all courts, and a special record has to be kept. Children in bad company or juvenile offenders from 12 to 16 may be committed to the house of refuge, to the Society for the Prevention of Cruelty to Children (who may be appointed legal guardians) or to a duly authorised charitable institution, or person, but not to jail. Where sentence is given in the first, second, and third judicial districts the place of confinement is to be the house of refuge established by the Society for the Reformation of Juvenile Delinquents in New York; from other districts they are sent to the Western House of Refuge, called now the Rochester Industrial School, except in cases named below. If a person under 12 is convicted of felony, or under 16 of crime, or male 16 to 18 of crime in any degree not amounting to felony, the court instead of prison or penitentiary, may confine him in a house of refuge. Males aged 16 to 21 convicted of felony, or ordered imprisonment for one year or less, may be sent to a county penitentiary instead of to prison. Thus a prisoner under 16 convicted of burglary is liable to imprisonment, but may be sent to a house of refuge instead; the term of detention is fixed by statute, and need not be specified in the committal. The authorities of the House of Refuge have full legal power to retain the males till their majority, females till they are 18; but they may bind out children committed to them. Children under 16 deserting their homes, or keeping bad company, may be committed to the house of refuge. The above statements do not prevent the following provisions: A person under 16 convicted of crime may, instead of being sent to confinement, or fined, be placed in charge of any person or institution willing to receive him, subject to such control as a parent may exercise over a minor. Thus the Female Guardians Society may receive girls committed by the court, and may place them out in families. The only magistrates authorised to commit children to institutions are the judges of the supreme court, police justices, judges of general session, city judge, and recorder. Appeals are allowed within twenty days from the person having had previous custody of the child, the child to remain in the institution pending the decision, but the child may be returned, if the home is found satisfactory. Boys from 7 to 16 may be voluntarily surrendered by parents, if vagrants, vicious, of bad habits, &c., to Burnham Industrial Farm.

A child's evidence may be given even if too young to understand an oath, but unless confirmed, such evidence may not convict. In prosecutions instituted by the Society for the Prevention of Cruelty to Children, fines are to be paid to that Society. In general, if a child is allowed to grow up neglected or falling into petty crimes, he may be removed from his parents.

The well-known ELMIRA Reformatory is for male first offenders (or for those not hitherto convicted of crime punishable by imprisonment) 16 to 30 years old (the average age is 21), such may be sentenced to imprisonment in Elmira. The maximum sentence is five years, this can be reduced to two by good conduct. Whippings used to be given here, according to some writers, for very small offences. Careful statistics of 4,000 criminals imprisoned there, showed there was clearly drunkenness in the parents in 38·7 per cent. cases; probably in 11 per cent. more, and of 5,000 only 1 per cent. had kept good company: 42·6 had no moral sense. The cost per head is from $107 to $133 a year.[46]

The principle governing Elmira and other State reformatories is that the inmates are not wholly responsible for their crimes; they had no chance owing either to an inheritance of evil tendencies and defects or to bad surroundings, hence the object aimed at is regeneration, physical and mental, rather than punishment, severe as the discipline is. The inmates are called inmates, not prisoners. Out of 406 discharged inmates, only 66 were badly conducted after leaving. The method at Elmira is largely based on physical development by means of gymnastics, baths, massage, &c., the muscles are strengthened, physical degeneration being the cause of much crime; this makes the will firmer and stronger, and gives power to resist evil; 66 per cent. of the inmates were found on examination to be physically degenerate, 75 per cent. grossly ignorant, and 95 per cent. came from bad associations. The estimated reforms of convicts paroled from Elmira up to September, 1893, was 81·9 per cent. Definite information of 1,125 ex-inmates showed certainly that 78·5 per cent. had not relapsed. Perhaps, however, the results are over stated, as they relate mostly to the period—six to twelve months—of supervision. The inmates number 1,354. The *Burnham Farm* is for vicious boys from 7 to 16 years old, and is worked, not by paid helpers, but by brothers (like Wichern's Rauhe Haus), called the Order of Saint Christopher. The results, Mr. Round assures me in June, 1899, are most remarkable, 90 per cent. have turned out magnificently. The boys are trained to love industry, and when that habit is acquired they are released, either adopted, apprenticed, or placed out; all are doing well so far; the industry taught is always one by which they can subsequently earn a living. This is the only New York Institution adopting the cottage system.

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[46] Report of State Charities Aid Association, 1898.

The chief of police ordered in 1896 that the Society for the Prevention of Cruelty to Children should always be notified of all cases of cruelty to children, and of arrests of children under 16, and of any offences against children under 16.[47] He also ordered that all girls under 16 given into custody should be at once transferred to the Society for the Prevention of Cruelty to Children, who will also take charge of all children brought as vagrants to the station house. The Society for the Prevention of Cruelty to Children may also receive children pending their trial or those committed as witnesses.[48]

There is probably no city where such enormous efforts are made, not, it may be conceded, always in the wisest way, at least in the past, to cope with child misery and sin. The results are now beginning to be seen in the diminution of crime among women and girls, shown in the great falling off of commitments to prison, in spite of increasingly severe laws; but crime among boys from 14 to 20 is increasing here, as in most cities.

The New York Police reports show a diminution of persons arrested for crime of some 16,000 in twenty years (1862 to 1882); the highest number given is in 1862, when 82,072 persons were arrested. The population increased during those twenty years some 50 per cent.

There was a further decrease of some 12½ per cent. of all crimes from 1875 up to 1885, though the lowest figure reached was in 1881 and 1882. There are 1,912 prisoners per million of the population in this State. Prison records have been kept in their present form since 1875, and show the following diminution in juvenile criminals:—

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[47] Rev. T. Dennis. New York. Society for the Prevention of Cruelty to Children.

[48] Reports of Society for the Prevention of Cruelty to Children; Children's Aid Society, &c., &c., New York.

New York Juvenile Delinquency. Number Arraigned.

Year.	Total.	Males.	Females.	Committed.	Population.
1875	1,139	932	207	917	726,386
'76	1,186	888	298	976	—
'77	1,035	748	287	794	—
'78	905	654	251	605	—
'79	552	436	116	266	—
1880	628	499	129	357	1,206,577
'81	610	467	143	330	—
'82	642	510	132	316	—
'83	610	496	114	393	—
'84	548	443	105	323	—
'85	515	420	95	320	1,397,395
'86	580	465	115	400	—
'87	531	416	115	363	—
'88	575	431	144	380	—
'89	646	485	161	461	—
1890	536	440	96	390	1,680,796
'91	677	564	113	515*	—
'92	570	493	77	459	—
'93	274	238	36	210	1,891,452
'94	—	—	—	—	1,957,452

* This increase is due to commitments of children to charitable institutions, mainly at the instance of parents.

Commitments of Girls under 20.

1877	2,657	1883	2,054	1889	1,107
'78	2,172	'84	2,413		
		'85	2,231	1890	1,991
1880	1,758	'86	1,968	'91	1,996
'81	2,107	'87	1,956	'92	1,984
'82	1,860	'88	1,116	'93	2,033[49]

Commitments of Females for Petit Larceny.

1859	994	1874	572	1885	243
		'77	452	'86	247
1860	890	'78	475	'87	223
'61	880	'79	380	'88	233
'63	1,113			'89	210
'64	1,131	1880	361		
'65	997	'81	309	1890	215
'69	989	'82	292	'91	179
		'83	298	'92	224
1870	746	'84	267	'93	229

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[49] Including those sent to institutions.

Commitments of Female Vagrants.

1857	3,449	1879	2,045	1887	2,055
'59	5,778	1880	1,541	'88	1,864
1860	5,880	'81	1,854	'89	1,995
1871	3,172	'82	1,788	1890	1,980
'72	2,243	'83	2,434	'91	2,022
'77	2,044	'84	2,520	'92	1,769
'78	2,106	'85	2,565	'93	1,802
		'86	2,418		

In regard to commitments of young girls, it should be remembered that the police statistics include now all those committed to charitable and reformatory institutions, whereas formerly only those imprisoned were reported in these tables.

Commitments of Males for Petit Larceny.

1857	2,450	1880	2,011	1888	1,927
'59	2,626	'81	1,926	'89	1,933
1865	2,347	'82	1,955	1890	1,937
1876	3,253	'83	2,055	'91	1,972
'77	2,346	'84	1,925	'92	1,961
'78	2,210	'85	1,950	'93	1,987
'79	1,844	'86	1,837		
		'87	1,928		

Commitments of Boys under 14 Years of Age.[50]

1864 (under 15)	1,965	1880 (under 14)	1,651	1887 (under 14)	1,773
'65 ,,	1,934	'81 ,,	1,823	'88 ,,	1,836
1876 (under 14)	2,076	'82 ,,	2,124	'89 ,,	2,097
'77 ,,	1,930	'83 ,,	2,118	1890 ,,	2,031
'78 ,,	2,007	'84 ,,	2,248	'91 ,,	2,061
'79 ,,	1,670	'85 ,,	2,099	'92 ,,	2,294
		'86 ,,	2,240	'93 ,,	2,079

It will be seen from these figures that the commitments of girls and women for vagrancy fell from 5,880 in 1860 to 1,802 in 1893, or from one in every 138½ persons in 1860 (when the population was 864,224) to one in every 1,050 in 1893 (when the population was 1,891,306). Again, the commitments of petty girl thieves fell from one in every 743 in 1865 (when the population was 726,386) to one in 8,259 in 1893. Male vagrants also have diminished, and male petty thieves have decreased by some 700 during twenty-five years, as have also the commitments of boys under 14 years.

This is graphically represented by the following diagrams:—

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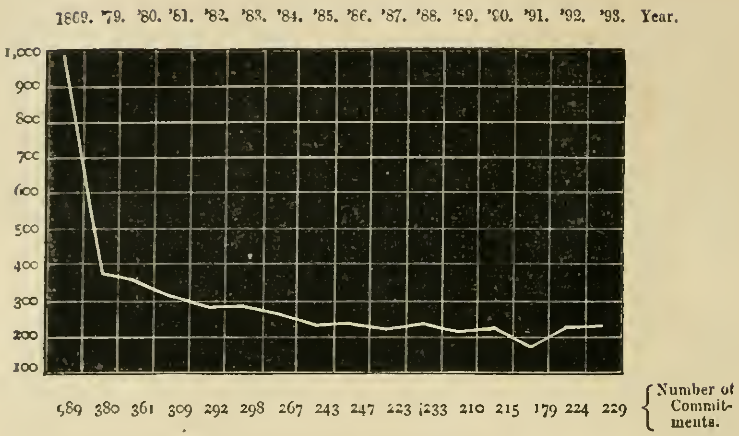
[50] The above tables are taken from the Police returns and the "Reports of "the New York Children's Aid Society."

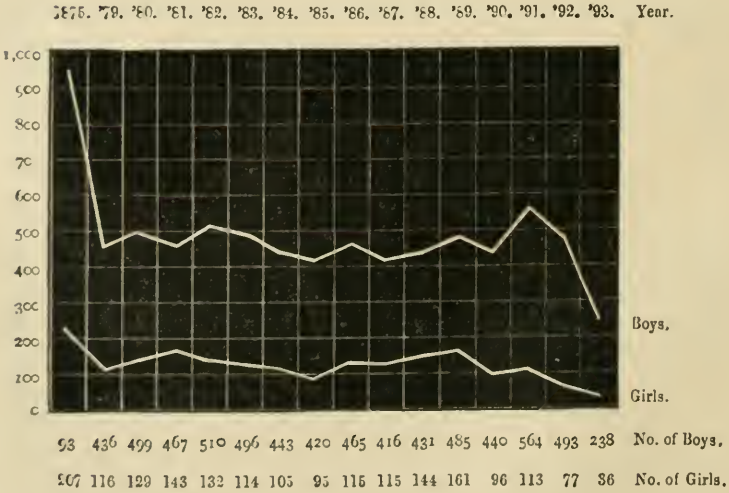
NEW YORK.[51]

Commitments of Girls for Petty Thefts.



Or, from 1 to every 743 of the population, the number has fallen to 1 in every 7.500

Juvenile Delinquents



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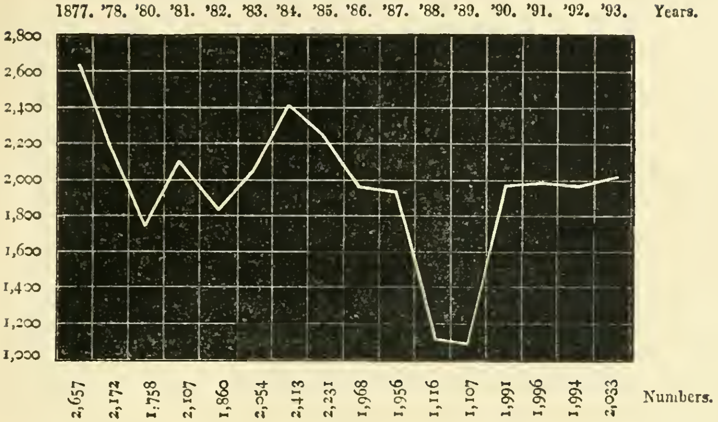
[51] In part from "The Children of the Poor" by Jacob C. Riis. By permission.

Commitments of Girls under 20 *for all causes.*



New York[52] of course contains many nationalities, and the foreign-born appear to contribute more than their rightful share of convicts and paupers. Thus, while Irish-born people are 12·6 per cent. of New York inhabitants (more than any other nationality), in the penitentiary they number 15·4 per cent. of the whole; in the workhouses, 36·7 per cent., and 35·5 in hospitals, asylums, &c.; that is of the total inmates in each place.

It appears that there has been a diminution of juvenile delinquents of something like 50 per cent. between 1875 and 1891, though part of the decrease may be credited to the increasing reluctance of magistrates to send children to prison. The warden of the city prison stated in 1852 that one-fourth of *all* the prisoners, and half of those in for petty crimes, were under 21 years of age. The arrests averaged 70 in every 1,000 of the population, or 1 in 14, and there was the enormous number of 30,000 vagrant children in addition. In 1849 the chief of police reported 2,955 children under 15 as vagrants and dissolute (in eleven wards of the city); the boys were all thieves, the girls all embryo prostitutes, and 10 per cent. of the entire child population of school age were vagrants. In 1881 1,287 vagrant girls were aided and lodged by the Children's Aid Society; in 1891 only 335. There are still some 50,000 children of school age not at school, in spite of the law; the gravity of this fact may be judged from the statement that three-fourths (other reformatories give the same proportion, 75 per cent.) of those committed to Elmira had next to no education, and Dr. Harris, Commissioner of Education, stated that the returns of seventeen

[52] "Forum," January, 1899.

States showed that there were eight times as many criminals from the illiterate as from an equal number of the educated class. The ratio is the same in Michigan, but the uneducated in that State only number 5 per cent. of the population. An argument in favour of preventive work is further found in the cost per head of prisoners. In "the Tombs" this is \$107·7; the cost of each child in poorhouses is \$140; of each child aided by the Children's Aid Society (some 10,000 a year), \$24½ per head. Further details of special institutions are omitted for want of space.

Massachusetts.

To this State belongs the double honour of having been the first to start a State system of preventive work, and also of having set an example (gradually being followed by other countries) as to methods of dealing with first and juvenile offenders. The boarding-out system also is widely adopted here for all classes of children. The population of the State is 2½ millions. The First Offenders Act was passed in England in 1887; in Massachusetts in 1869. Under this Act the care of juvenile offenders under 17 is committed to State agency; all charges against those under 17 must be investigated by a State agent, and all trials of minors attended by him. The trial must be held apart from others, and the State agent must appear on behalf of the child to give evidence and to advise the court. Notice of the trial of any child must be given to the State Board and to the parents. Where there is no parent, the magistrate may appoint some person to act on behalf of the juvenile offender.

For first offences, usually merely a warning is given, and the child may remain at home under supervision by the State agent or probation officer; or the child may be dismissed on probation, and the sentence suspended, if greater restraint appears desirable, the State agent watching over the child in the meantime. The magistrate has power to impose a fine on the parents, or to remove the child from his home if the parents appear hopelessly vicious; but only about 1 in 20 are committed to the State Board[53] of Health, Lunacy, and Charity. 70 per cent. are boarded out; or if stricter discipline is needed, and other means have failed (and only then), the delinquent is sent to a reformatory; this is a step taken only after several offences, as a rule; still more incorrigible children being finally sent to prison; this, however, is only resorted to in some 9 per cent. of all cases of juvenile and first offenders. The State agent is a most important and essential part of the system; he inquires into the history of the offenders, takes charge of those on probation, and to his watchfulness much of the success of the Act is due. The probation system has been applied to adults since 1880; a caution or fine is given, really a suspension of sentence, as the offender may be brought up again unless reformed. In one district 95 per cent. did well under probation. Female prisoners are also allowed out to service on license. Petty juvenile offenders under 17 are committed when necessary to the custody of the State Board, and sent, if boys, to Lyman, and, if girls, to Lancaster Industrial School, and some (both boys and girls) to Monson.

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[53] This Board was reconstituted in July, 1898, but want of space compels me to omit details concerning its constitution.

The main thing to be noticed under this system is that offenders, especially children, have various chances of reform before reaching prison life. These steps are: warning, probation and supervision, boarding out, and reformatory;[54] only when these fail is prison resorted to. As a result, though 75 per cent. of all the children brought into court are convicted, only one-fifth of these are sent to institutions, only one-ninth to reformatories, and fewer still to prison; one-third of the total are remanded on probation. When juvenile offenders are committed to the Board, the children may be left on probation (only one-tenth of these reappear before the Board) with their parents; but if this is found to work badly, they can be removed to an industrial school or placed out in a family without further trial. Supervision is exercised by official but unpaid visitors working under the agent. Not only are juvenile prisoners now almost abolished, but the inmates of reformatories and industrial schools have diminished 50 per cent. in ten years (many institutions indeed having been closed), the cost has greatly diminished, and the number of juvenile offenders is decreasing, though the population is increasing; so crime is prevented, and is sensibly diminishing. Very few of those released on probation reappear as criminals: in five years 2,295 out of 2,561 were doing well after receiving a warning only; fully 85 per cent. do well. The probation officers are appointed by Government for the whole State, with the power of police officers. In 1879 there were already 300 fewer children (juvenile offenders) under State care than in 1870, costing $52,000 less. In September, 1898, 3,243 children were under the care of the Board (only 519 of whom were in institutions); of the total, 1,549 were juvenile offenders: some were sent to schools, but most were boarded out.

In 1898 the State agent attended in court the cases of 3,451 juvenile offenders (24,000 since the formation of the Board); of these, 497 were fined, 734 released on probation, 337 committed to the State Board, 88 to the House of Reformation, Boston, 153 to the Massachusetts Reformatory, 191 to Lyman, 91 to the State Industrial School, 511 were discharged; some appealed, some were sent to trustees, &c., 18 only to jail; 475 cases were still under consideration, 7 were sent to the women's reformatory. Of 897 children out on board, 102 were juvenile offenders. The State Board is required to visit all minor wards at least once a year; voluntary but official visitors supplement this, working under the State agent. The total cost for dependent and offending children is $105,000; boarding out costs from $1 to $3·5 a week per head. There are 1,621 children in reformatory and industrial schools, and 2,335 prisoners per million of the population. The State farm receives prisoners under the new Act (October, 1898) with indeterminate sentences, not to exceed one year for drunkenness, two years for other offences; but release, subject to revoke, may be given sooner, if there is apparent reformation. It is noted that for twenty years 60 per cent. of the offences are traceable to drink. The Boston House of Reform was opened in 1826, the Farm School in 1833 (the same year as the German "Rauhe Haus"); the average cost is $2·1 a week, at the Girls' Industrial School $3·6, and at Lyman $4½ per head. The weekly cost of each neglected and offending child is $3·58, of those at board $1·94; and of the 200 latter only 13 have been returned to institutions, when the boarding-out payments cease at 10 years of age; the rest were kept without payment.

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[54] Manual of Laws concerning children. Various reports of institutions.

All minor wards are now placed under the superintendent of out-door poor, who has male and female assistants.[55] The institutions for juvenile delinquents are:—The *State Industrial School*[56] at Lancaster, opened in 1856, for vicious girls from 7 to 16 years old, committed for any offence. It has an average of 89 inmates, and is on the cottage system. Each girl has a separate bedroom, and none may leave till she can sew, cook, wash, &c. A noticeable point is the value given to so-called menial work; teachers of this are as highly paid as other officials. Though control is given during minority, the girls are generally soon licensed out to service, so that many, though still under supervision, are no expense. Most of those committed are notorious offenders, younger offenders now going elsewhere, but fully 72 per cent. do well on leaving, indeed, only 24 out of 272 under supervision were of doubtful conduct.

The *Monson State Primary* and reform school, opened in 1866, is for young offenders, but it is only a temporary home; at present it is a huge building. Children are boarded out after a time on payment till they are 10. The committals here are rapidly falling off, and are now scarcely one-fourth as many as in 1866.

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[55] Annual reports of State Board, including that for 1898.

[56] Charities Conference, Chicago.

The *Lyman or State Reform School*, opened in 1848 as a manual school for the reformation of juvenile offenders under 16, was one of the first preventive works undertaken by the State in any part of the world. There are seven houses, each holding some 30 boys; about 70 per cent. are licensed out, under supervision, after a detention on an average of seventeen months. It is noticeable that punishments have fallen from 31 per cent. a month to 8 per cent. since the family life and manual training have been adopted, a decrease of 75 per cent. The commitments are indeterminate. Incorrigibles are transferred to Concord; this is, however, seldom needed. Some 73 per cent. do well after leaving: the average cost per head is $4·3 a week.

Female offenders in any part of the State may be conditionally released and sent to service for the last third of their sentence; about 50 per cent. are thus licensed out. The *Sherborne Reformatory*[57] Prison is for women of all ages, from 15 years old and upwards. The *State Reformatory* at Concord for first offenders from 15 to 35 years old is like Elmira in its method—peculiar to the States—of dealing with adult-juvenile criminals not by ordinary prison methods, but by reformatory; the sentences are indeterminate, and release on parole (subject to recall) may be given, if there is hope the individual has reformed, and he has worked up to the highest grade, but only if a situation has been found. As means of reform military and gymnastic exercises are given, advanced education, manual training, &c., but the discipline is severe. Drunkenness caused nearly three-fourths of the total arrests.

It will thus be seen that in America much older offenders than with us have a chance of reform, and may avoid prison, by means of admonition, probation, conditional release, and these adult reformatories, where the average age of the inmates is 22. Probation has been successfully adopted in several European countries now, but nowhere so widely and successfully as in America. Further details and statistics I am, however, compelled for the present to omit, this paper being already too long.

Michigan.

The preventive methods first tried in Michigan have since been adopted in Wisconsin, Rhode Island, and Minnesota, with slight variations in detail. This preventive work (of which I have given full details elsewhere)[58] has proved that reformatories become increasingly empty as preventive work is developed. The Michigan plan is to provide homes for all dependent and neglected children sent by the probate court, then send them into families after an average time in the school of six months, with subsequent supervision and loss of parental control. Contrary to expectation, while the population of Michigan has increased 70 per cent. (in twenty-four years) her dependent children have *decreased* 65 per cent. since the State Public School was opened in 1874. There were 600 dependent children in 1871, and the population was 1½ millions, or 1 dependent child to 2,223 inhabitants in 1874, 1 to 7,256 in 1890, now 1 to 10,000.

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[57] Paper on Sherborne. By A. Webb, Esq., M.P., read before the Statistical Society of Ireland, September, 1897.

An Act was passed in 1873 (frequently amended since) establishing a State agency for juvenile offenders. By it the governor may appoint in each county an agent of the State Board for the care and protection of juvenile offenders and dependent children, known as the county agent; he is paid expenses and $3 a day, or per case. The superintendents of institutions for the reformation of juvenile offenders look to the agent for help in finding homes, in supervision, &c. In any complaint made to a magistrate against a boy under 16 or girl under 17, the State or county agent is to be notified, to investigate the case, visit child's home, advise the magistrate accordingly, and generally to act as the child's protector. He deals with both delinquent and dependent children. If it appears good for the child and the public, he may be returned to the parents, friends, or (with the approval of the probate judge) be bound out to a suitable person till 21 or less, or a fine may be imposed, or the sentence suspended for a definite or indefinite time. If guilty and uncontrollable, he may be sent to the State Reform School, Industrial Home, or to any State, penal, or reformatory institution authorised to receive such. The agent also looks after discharged boys and girls, helps them to get work and homes, and must be notified when children leave reform schools, and must make reports on their subsequent conduct, so that the effects of the reformatory treatment may be known. Children in custody must be kept apart from adult prisoners. By the Act for the compulsory reformatory education of juvenile disorderly persons, those from 8 to 16 who are habitual truants, vicious, incorrigible (if there is no change in their conduct after written notice to their guardians), are to be brought before a judge, fined $10 to $25, if convicted, or the guardian must give a bond of $100 for the attendance of the child at school. If the child is uncontrollable by the parent, the parent may go free, and if proved to be a truant, he may be sent to a reformatory school if a boy over 10; to the industrial school at Adrian if a girl over 10, for one year or more, up to but not beyond 17 years of age; but such sentence may be suspended (and must be for a first offence) as long as the child attends school regularly. This law was amended in 1895 so as to include among juvenile disorderly persons, girls or boys frequenting or lounging near saloons, idling on streets, &c., against their parents' command, absenting themselves from school or employment, or lounging about for any dishonest or immoral purpose. Parents, the mayor, or chief of police in towns of over 8,000 inhabitants, may make complaint on oath that a minor has offended as above, a warrant is then issued, and if convicted the child may be sent to Lansing till 17 if a boy, or, if a girl, to a girls' industrial school till 21 or for less time. I am obliged to omit details of the reform schools.

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[58] "Foreign Legislation on behalf of Destitute Children." By Rosa M. Barrett, published by the Statistical Society of Ireland. Reports of Michigan State Public School. Laws of the State of Michigan.

Minnesota.

Preventive work is very zealously carried out here, and the inmates of correctional and charitable institutions have increased far more rapidly than the population. The courts have power to apprehend, try, and commit young children to the Minnesota State Reform School for vagrancy, &c. There were in the reformatory 168 in 1898; the average cost was $269; of prisoners $192. Preventive work has been much developed lately, as "the right "of the State to punish criminals, carries the right to prevent "them becoming such." The Elmira system is now in operation in many State reformatories very successfully, and in many prisons in a modified form. It includes the indeterminate sentence. All the jails are improving, and better classification is being made of the criminals.

The *Training School*[59] for boys and girls at Red Wing, opened in 1868, has received 2,102, up to July, 1898; mostly committed for larceny and incorrigibility. There are now 324 inmates; average for 1897, 359; for 1898, 328; average detention two-and-a-quarter years. Those released are kept under supervision and under the control of the State till they are 21, each sending in a monthly written report (these are all replied to!); 80 per cent. are doing well, 293 boys on furlough are working, 11 in jail. When unsatisfactory, or out of work, they return to the school. Of the 37 returned for crime, 29 had gone to their parents on leaving school. The average cost per head is $167.

There is no separate institution for delinquent girls or female criminals. The estimated number of prisoners for 1900 was 500; inmates of the reform school 230. The prisoners at St. Paul's, Minnesota, under fixed sentence may be released on parole after serving half their time, and after they have been in the first or higher grade six months; other prisoners are also released on parole after being in the first grade six months. In 1885 there were 750 prisoners per million of the population; in 1895, 685 per million (see p. 243). This decrease is partly owing to the parole system, but, even in the three chief cities, the ratio of prisoners fell from 1,580 per million in 1892, to 1,360 in 1896, though comparing 1894 and 1896 there was an increase of 28 per cent. The inmates of the State Training School have increased from 209 in 1889 to 371 in 1896, 328 in 1898, and of the reformatory from 104 in 1890 to 140 in 1896.[60] Crime being "rooted in laziness, "vagrancy, and loafing," the more these are combated the less crime there will be. In this State also, it is found that most petty thieves are ignorant, and from 10 to 20 years old. Not a single child from the State Public School has subsequently drifted to the reformatory.[61]

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[59] "Monthly Bulletin of Charities." Minnesota State Conference, 1898. Reports of the various institutions.

California, with the same population as Minnesota, has 5,000 dependent children, costing $300,000; Minnesota about 200, costing about $40,000.

In 1899 the name of the Reform School was changed to State Training School, and all children from 8 to 17 convicted of any crime punishable by imprisonment, or being vagrant, incorrigible, or of vicious conduct, are to be committed to the guardianship of the State Training School. The managers may place such children in suitable homes, apprentice them, train and educate them in such ways as may be most conducive to their reformation and for their benefit until they are 21. The commitment must be approved by the magistrate and by the judge.

Each county of over 50,000 inhabitants must appoint a probation officer, whose duty is to be present at all trials of children under 18; he is to represent the interests of the child, make investigations, and take oversight should the sentence be suspended, also to take whatever other action the court may direct as for the good of the child and of society. These officers have the powers of police officers. The judge may stay sentence pronounced against a child under 18 for one year, conditional on the child's good behaviour, either placing the child under the care of the probation officer or returning him to his parents under supervision, and under any conditions prescribed. The court may revoke or enforce the sentence if desirable subsequently, or suspend it absolutely if the conditions imposed are met.

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[60] Minnesota State Conference, 1898, and September, 1899.

[61] The average annual cost of a child in a reform school in the States of Massachusetts, Michigan, Minnesota Illinois, and Wisconsin, is $145.

Education is made compulsory from 8 to 16, and truant officers appointed. School boards are empowered to establish schools for truants, vagrants, and others, with power of committal to the State Training School for persistent disobedience; and penalties are prescribed against parents, guardians, and others for failing to keep the law. The managers of the St. Cloud Reformatory are authorised to discharge inmates before the end of their term. There is an agent to look after prisoners out on parole; in five years, out of 330 paroled prisoners, only 30 returned to prison. Only 5 per cent. of the prisoners are said to have trades. In six years four-fifths of those under 25 who were tried had learnt no trade, and hardly any who were under 21. All prisoners at St. Paul's learn a trade, so that they can do honest work on leaving. Tramps are largely produced by want of a trade; thus, out of 5,000 tramps, 80 per cent. were unskilled, only 20 per cent. skilled workmen, and these latter had mostly fallen through drink.

There is a decided decrease in crime and in the prison population of this State since 1893; and the ratio of prisoners to the general population has declined from 750 in the million in 1885, to 685 in the million in 1895. This decline is doubtless due in part to the operation of the parole system in the State prison and the State reformatory, for there has been an increase in the number of commitments.

It is a remarkable fact that, while it is generally believed that the cities are the breeding places of crime, the ratio of prisoners from the three cities of St. Paul, Minneapolis, and Duluth has decreased since 1892 from 1,580 in the million to 1,300 in the million. At the same time the ratio of prisoners from the rural counties has increased since 1892 from 385 in the million to 445 in the million.

Minnesota.

31st December.*	Estimated Population.	Number of Prisoners.	Ratios (Prisoners in a Million).
1885	1,117,798	836	750
'90	1,301,826	931	715
'92	1,410,000	1,023	725
'93	1,465,000	1,111	750
'94	1,520,000	1,026	675
'95	1,574,910	1,080	685

* Prison census. From "Bulletin of Charities."

Hennepin, Ramsey, and St. Louis Urban Counties.

31st December.*	Estimated Population.	Number of Prisoners.	Ratios (Prisoners in a Million).
1892..............	400,000	632	1,580
'93..............	415,000	670	1,615
'94..............	430,000	525	1,220
'95..............	443,910	578	1,300

Seventy-eight Rural Counties.

1892..............	1,010,000	391	385
'93..............	1,050,000	441	420
'94..............	1,090,000	501	460
'95..............	1,131,000	502	445

* Prison census. From "Bulletin of Charities."

Minnesota.

Years.	Estimated Population of the State.	Average Number of Inmates of the State Correctional and Charitable Institutions.	Number of Inmates for each Million Inhabitants.
1878-79	735,000	1,133	1,541
'79-80	780,773	1,206	1,544
'80-81	830,000	1,183	1,425
'81-82	900,000	1,295	1,439
'82-83	960,000	1,388	1,446
'83-84	1,040,000	1,689	1,624
'84-85	1,117,798	1,934	1,730
'85-86	1,155,000	2,182	1,889
'86-87	1,190,000	2,408	2,024
'87-88	1,225,000	2,772	2,263
'88-89	1,263,000	3,052	2,417
'89-90	1,301,826	3,275	2,516
'90-91	1,355,000	3,486	2,573
'91-92	1,409,000	3,699	2,625
'92-93	1,463,000	3,909	2,672
'93-94	1,517,000	4,413	2,909
'94-95	1,572,793	4,808	3,057
'95-96	1,625,000	4,929	3,032
'96-97	1,680,000	5,289	3,148
'97-98	1,735,000	5,491	3,165

Illinois.

For years Illinois has had sorrowfully to acknowledge that, in spite of various efforts, crime was increasing, even among juveniles, and all efforts had been so far defeated; but it has not been content to remain beaten, and after inquiry and examination into the working of various laws elsewhere, the following code was drawn up and passed the legislature on 22nd April, 1899. We may confidently look for a change for the better as a result of this enlightened method of dealing with embryo criminals.

The Act is "to regulate the treatment and control of dependent, "neglected, and delinquent children."[62] As regards the last class, it includes all children under 16 who violate any law. In counties with over 500,000 population, the circuit judges shall designate one of their number to hear all cases coming under this Act, which must be heard in a special court room, to be called the Juvenile Court Room, and separate records kept. When children under 16 are arrested, the magistrate or officer in charge shall transfer such child to this court for hearing. Any person having reason to believe a child is neglected or delinquent, may file a petition to this effect, and the parents or guardians must be summoned, or, failing them, other relatives; or a person may be appointed by the judge to act on behalf of the child, who, pending the decision, may be kept by some person or in some suitable place provided by the authorities. The court may appoint probation officers to act in the interests of children, investigate cases, and take charge of any children before and after trial as may be directed. Delinquent children may be committed to the care of the probation officer, or may be allowed to return home under his supervision, to be recalled before the court should this appear necessary; or the probation officer may board out the child in a suitable family or home. The child, if it appears desirable, may be committed to an industrial school if a girl, or training school if a boy. If, however, the child has committed a criminal act, and the judge considers such a course best in the child's interests, he may be committed to any incorporated institution for the care of delinquent children, or if a boy over 10, to the State reformatory; if a girl over 10, to the Home for Juvenile Female Offenders; in no case beyond minority.

In all these cases guardianship of the child is given to the person or institution taking charge, though the court retains power to remove the child subsequently. The latter may parole the children; or the court, if so recommended, may dismiss the child from custody, whenever there is reason to believe his or her reformation is complete; or they may be placed in suitable homes, adopted or apprenticed, under supervision.

No child under 12 shall be committed to a jail or police station; if unable to give bail, a probation officer or other official shall take charge of the child in any suitable place provided by the county or city outside the jail boundaries. If sentenced to confinement, a child may not be in the same building, yard, or enclosure with adult convicts; hitherto there has been little separation of adults from juveniles, especially while waiting trial. The court can discharge boys committed under this Act at any time, or restore them to their parents.

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[62] Act of April, 1899; kindly sent me by Mr. H. H. Hart.

The managers of institutions receiving delinquent children must maintain an agent to visit children on parole, examine their homes to ascertain if they are suitable, assist them in finding work, and supervise them while on parole. All associations receiving these children are subject to the inspection of the Board of State Commissioners of Public Charities, and must furnish such information as the judges require to aid them in dealing with children, and must publish full annual reports. Children may be legally adopted. Adoption is upheld, even if parents object, if for the child's good. The county judge of each county may appoint six persons to serve without pay as visitors to all institutions receiving children under this Act, and report thereon. "This Act," the concluding words run, "shall be liberally construed to the end "that its purpose may be carried out, to wit, that the care, "custody, and discipline of a child shall approximate as nearly as "may be to that which should be given by the parents, and in all "cases where it can properly be done, the child be placed in an "approved family home, and become a member of the family "by legal adoption or otherwise."

This law therefore establishes a separate children's court (in Chicago), prohibits the confinement of children in jails or in the same buildings with adult convicts, commits children to approved societies, places child-saving associations under the supervision of the State Board, and adopts the probation system for juvenile delinquents. The county court judge may also order the release of all children from workhouses, if, without cost to the county, homes can be secured for them.

There are 102 jails in this State; few classify the inmates as yet.

There is a State reform school at Pontiac[63] for convicted boys, first offenders, from 10 to 21 years old, too bad for industrial schools, but none for girls; the average age is 18, and the inmates are more criminals than juvenile delinquents. The criminals in this State are mostly young.

There is a girls' industrial home at Evanston and industrial school in Chicago, both for juvenile offenders and others sent by the magistrates. In Chicago 15,500 children were arrested in 1896 (261 were under 10); of course this includes many children merely destitute. One of the residents at Hull House Settlement,

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[63] Charities Convention, Mr. Dud'ey.

Chicago, has official connection with the police courts, &c., and has special charge of boys and girls under their first arrest. St. Mary's Industrial School has nearly 400 boys, costing about $120 a head; Glenwood has 250, and has had altogether about 2,000, nearly all of whom are now doing well and earning: it is on the cottage system. In the Chicago Industrial School there are 160 girls; the Illinois Training Industrial School has 184: admitted during the year 178, total 347 inmates; Peoria Training School, 35 to 40; making a total in the above schools of 1,691 inmates; these are all delinquents sent up by the courts. During the year 428 were returned to friends, 331 placed in homes, and 75 sent to the Home for Juvenile Female Offenders. The cost per head was from $120 to $300 a year.

The Board of Charity,[64] with auxiliary boards in every county, has been formed to supervise and assist institutions, look after prisons, poorhouses, neglected children, &c. Each county pays $10 a month for boys committed to the industrial school. In 1892, on a given day, some 51, or 6½ per cent. of the total prisoners, were under 16, and about 740 in the year.

Many boys are sent to Bridewell with adult criminals, as well as to the industrial school. The Illinois School of Agriculture and Manual Training for Boys in Chicago is for street waifs sent by order of the court, and is on the cottage system; the boys are sent to homes as soon as possible, after a year or less. The school holds some 250 boys.

In 1880 there were 12,691 prisoners in the county jails; in 1890, 19,538, an increase of 53 per cent.; the population increased 25 per cent. in the same time. In the State Home for Female Juvenile Offenders, the average number of inmates in 1895 was 27; 1896, 47; 1897, 60; average cost per head a year $532. There are large grounds, and the inmates are classified, the building being in separate flats, each with kitchen, matron, &c. The girls learn housework, poultry raising, &c., and how to earn their living honestly. Sixteen left in the year; there were 90 in altogether; remaining at end of year, 74.

Rhode Island.[65]

My correspondent here was unable to give me the number of juvenile criminals, but thought juvenile crime was on the increase. Others say that it is certainly diminishing.

Separate trials of children are held. By a law passed in May, 1898,[66] minors under 16 must be arraigned and tried separately and apart from others (unless charged jointly with adults) in the counties of Providence and Newport. They are to be tried at suitable times; such time to be called the "Session of Juvenile "Offenders," and separate records kept. An agent of the State Board of Charities, or of the Society for the Prevention of Cruelty to Children, or of St. Vincent de Paul, must be present at the trial, secure counsel, and learn all particulars, so as to aid the court and protect the interests of the child. Children under 13 unable to furnish bail may be committed to the charge or custody of one of these agents, who is responsible for it, and the court may place a child provisionally and temporarily under his full control. No court can commit a child under 13 to jail or prison for default of bail, non-payment of fines, &c., or for any punishment (except a crime punishable by imprisonment for life); all must be sent to the school for boys at Sockanossett, or, if girls, to that at Oaklawn. No court fees or costs of officers are allowed.

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[64] Report of Board of State Commissioners of Public Charity.

[65] Report of American Humane Society, Rhode Island, Reports of the Society for the Prevention of Cruelty to Children.

[66] Public Laws of the State of Rhode Island.

Under this new Act, from 25th June to 9th December, 1898, 154 cases were treated, instead of being made public and tried with criminals. First minor offences are usually met by a small fine; no costs. There is no longer an obligation to work out fines in prison, as, if the fine is not paid, the child goes to the reform school. The trial is not held in public, nor is the accused child taken through the streets with criminals. He is first tried by the judge in a separate room; if necessary subsequently in the Juvenile Court.

One of my correspondents here remarks that the laws are perfect, though they need amending!

In Providence, Rhode Island, special provision has been made for defective school children and for those inclined to truancy, in order to check this early tendency to idleness, which often ends in crime.

Maryland.[67]

Crime appears on the increase, nor is there any diminution of juvenile crime in recent years. There is a decrease in Baltimore of child beggars, children living in brothels, &c. The Society for the Prevention of Cruelty to Children takes charge of children brought up for petty and minor offences, and the court stays proceedings if the agent undertakes to make provision for the child. A large number are handed on in this way and dealt with as seems best in each case; sent to reformatories, returned to their homes, &c.

Juvenile criminals under 16 may have their sentence suspended, or may be placed in a reformatory or other institution till they are 18 or 21; or employment may be found for them away from the place where they were convicted; or they are, if incorrigible, sent to the house of refuge.

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[67] Manual, with laws for the protection of children.

Connecticut.

No child under 16 may be committed as vicious, truant, or incorrigible to jail, almshouse, or workhouse. A judge may commit a child (if neglected, &c.) to a temporary home till he is 16 on proceedings instituted in the manner provided for commitment to a reformatory or industrial school, or on petition of the Humane Society, Board of Charities, &c. Only those who have committed offences punishable by law, or who are leading idle, vagrant, or vicious lives, may be committed to the State Reform School, or to the Connecticut Industrial School for girls, or when such restraint is necessary. Here my informant writes that he "cannot say "whether crime has diminished."

Children under 12 (16 in Connecticut) may not be imprisoned in the New England States—Maine, New Hampshire, Vermont, Rhode Island, Massachusetts, and Connecticut. Older juvenile prisoners are to be kept apart from adult criminals or sent to special schools. They are to be tried apart from adults in a separate court. In Connecticut and New Hampshire only criminals under 16, vicious children and vagrants may be sent to reformatory and industrial schools.

In Connecticut young offenders were sent to prison till 1878; there are now some 1,853 in reformatory schools; 6,800 have been sent out, and nearly all are doing well; the family life in cottages is the system adopted. A girls' industrial school with six cottages was opened in 1870 for vicious girls from 8 to 16.

AUSTRALASIA.

New Zealand.

The Industrial Schools Act[68] of New Zealand of 1882, amended 1895, repealed all Acts previously passed in connection with criminal children. A "child" in this Act is any boy or girl under the age of 15, or apparently so.

Children come under this Act who are destitute, beggars, found wandering, without a home, found in brothels or associating with drunkards, vagrants, &c.; all such may be brought by a constable without a warrant before a magistrate, who may order such child to be sent to school. If a child has been convicted or accused of any act punishable by imprisonment or less punishment, the judge or magistrate may order such child, due regard being given to the child's age and circumstances, to be sent to school, either instead of punishment or subsequently: this holds good even if the child were only accused, but not convicted. Such order may be made at any time subsequently, the judge naming the school; such orders to be reported to the minister. A child may also be committed as uncontrollable on application by the parent, if he proves this and pays cost of maintenance. Payment is made according to arrangement between manager, parent, and person authorised by the governor. Any person under 18 sentenced to imprisonment may be sent to an industrial school under this Act, after, or in lieu of, imprisonment. The State is the guardian during minority, but the guardianship of all inmates and of those licensed or apprenticed out may be delegated to, and vested in, the manager of the school till majority or discharge; parents (except where the child was admitted at the parent's wish) losing all legal control. Inmates may be transferred, or their guardianship transferred, to private persons or institutions, or they may be released by the governor. The cost of such schools is defrayed out of public money voted by the General Assembly for this purpose, except for such contributions as parents may be ordered to make. This (whether the child is convicted of crime, or whatever may be the cause of detention) may amount to 8*s.* a week or less, according to the parent's ability. Such sums may be recovered as a debt, or may be ordered to be paid direct from the employer of the parent to the school. Careful rules are also made for the recovery of money for past maintenance, should the parent subsequently be able to pay.

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[68] Industrial Schools Act, First Offenders Act, 1886 and 1898.

The Prisons Report for 1897[69] says: "The First Offenders Probation Act continues to work most satisfactorily, and has often "sufficed to check any further transgression." The percentage of prisoners to the population was 0·0876 in 1897, 0·0729 in 1896. Ninety-nine of the prisoners were licensed out or released on probation; only four unsuccessfully. Both in 1896 and 1897 one child under 10 was in prison. Juvenile offenders,[70] however, are not increasing (see statistics later on). Prison brands a child, and industrial schools often contaminate, the authorities say, as they admit both juvenile delinquents and merely destitute children. Many workers speak of the difficulty of combining reformatory work with the effort to make crime abhorrent. Probation effects a great saving of expense, and has been successful in some 94 per cent. of the cases.

The First Offenders Act was passed in 1886; amended, September, 1898. Any person convicted of a first offence (exclusive of burglary, murder, and other serious crimes), may, in lieu of punishment, be placed on probation for a period not exceeding the term of imprisonment to which he might have been sentenced. He must report himself personally monthly, sleep at his given notified address, get his living honestly, and in a way approved by the probation officer, notify change of address, and produce his licence when required. Special conditions may also be imposed, such as recognizances for good behaviour, payment of costs, or a part, &c. On the expiration of the term of probation, if the conditions are fulfilled, the person shall be deemed to be as fully discharged as if he had served his term of imprisonment. Even if unable to obtain bail, he may be released under this Act. If the conditions are unfulfilled, or the person's conduct unsatisfactory, he may be rearrested without further warrant, when he may be committed to prison or again released on probation. When any probation officer does not think it good for the offender or the public that a person should be placed on probation under this Act, he must state his reasons to the court in writing for not recommending this course, and the court may decide according to the evidence given. "Offender" in this Act means any person whose previous character has been good, who has not been previously convicted of any indictable offence. Probation officers, who are appointed by the governor, have constabulary powers; their duties are to keep records, make reports, inquire into the character of every first offender to see if amendment is probable, and if so, to recommend probation to the court, &c.

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[69] Prison Inspectors' report, New Zealand, 1897.

[70] Industrial school report.

There has been a marked decrease of crime (and also of recidivistes) in New Zealand under all headings—assaults, larceny, drunkenness, &c., and both amongst adults and juveniles. The crimes of a New Zealander are more of theft than of violence, and are smaller in proportion to their numbers than among those of foreign birth. Thus 32·1 per cent. of those convicted of larceny were New Zealanders, 23·9 others. The population in 1896 was 743,214:—

		Percentage to Population.	Percentage of Prisoners.
1893	New Zealanders	58·6	16·8
	„ over 15 years old	34·0	16·8
'96	„	63·0	25·0
'93	English born	19·0	33·1
'96		16·8	28·0
'93	Irish born	7·6	24·9
'96		6·5	20·6
'93	Scotch born	8·3	11·9

The convicted prisoners (separate individuals)[70] have decreased as follows:—

Year.	Number.	Proportion per 10,000 of the Population.	Trials per 1,000.
1882	—	—	43·4
'86	2,774	47·8	36·5
'87	2,639	44·2	33·4
'88	2,531	41·8	30·8
'89	2,399	39·0	30·1
1890	2,397	38·6	29·3
'91	2,113	33·5	27·2
'92	2,164	33·6	27·3
'93	2,111	31·9	27·1
'94	1,955	28·7	—
'95	1,930	27·8	—
'96	1,936	27·1	26·3

This is a decrease of 17·1 prisoners in proportion to the population between 1881 and 1896, and 23·9 from 1886:—

*Offences of Children.**

Year.	Under 10.	10—12.	12—15.	15—20.	
1889	2	5	19	76	Of these 14 were girls
'90	6	6	20	78	" 15 "
'91	1	2	14	76	" 7 "
'92	1	1	15	90	" 12 "
'93	1	1	10	86	" 10 "
'96	1	1	2	122	

* "Prisons Report," 1897.

There were 2 prisoners under 10, 25 under 15, 241 under 20 in 1897; 7·5 per cent. of the male prisoners were under 20, and 5 per cent. of the females. Female prisoners are only one-sixth as numerous as males. There is a decided and constant decrease among juvenile offenders.

The convictions for *drunkenness*[71] show the remarkable decrease of 50 per cent. between 1885 and 1894; the total convictions for drunkenness were only 515 in 1896, 469 in 1895, and 457 in 1894. These offenders are mainly of foreign birth: thus, out of 619 arrested for drunkenness in one year, 503 were born in Great Britain, and only 59 in New Zealand:—

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[70] Industrial school report.

[71] "Official Year Book" for several years. Mulhall's "Dictionary of Statis-"tics."

Per 1,000 Inhabitants in 1894.
The arrests for drunkenness constituted 20·7 in the United States.
" 8·5 " New Zealand in 1894.
" 8·1 " " '96.
" 9·4 " South Australia.
" 19·3 " New South Wales.
" 7·7 " Tasmania.
" 15·7 " Victoria.
" 13·6 " Queensland.

This is worth noting, as the children of drunkards form the greater number of neglected and delinquent children in every country, and consequently New Zealand, with its comparatively few drunkards, has also comparatively few juvenile delinquents. In 1897 the total number of children under the care of the State (but not all an expense to the State) was 1,588 (1895, 1,555, and in 1896, 1,559). These were placed as follows:[72]—In Government schools, 199; in private schools, 382, or 581 altogether in institutions; 396 were boarded out (385 from Government schools, 11 from private ones), 119 were with friends on probation, 439 in service, 31 in other homes, on leave 20, in jail 2. Of the new children admitted during the year, 64 had been guilty of punishable offences, 20 were vagrants, 54 destitute, 33 living in disreputable places, and 95 had one or both parents dead. Only about 18 per cent. of the total are actually resident in Government schools. The wages of those in service amounted to 9,436*l.*; the cost per head of those under control is 16*l.* 7*s.* 1*d.*, or, including those with friends, under supervision only, 12*l.* 15*s.* From 3*s.* 8*d.* to 7*s.* a week is paid for boarded-out children, but as 6,848*l.* out of a total cost of 14,018*l.* was recovered from relatives, the actual net cost per child to the State is reduced to 6*l.* 10*s.*

Year.	Number of Male Prisoners under 20 Years of Age.	Number of Female Prisoners under 20 Years of Age.	Proportion per 100 Male Prisoners.	Proportion per 100 Female Prisoners.
1892....	127	13	6·8	4·2
'93....	122	11	6·7	3·6
'94....	—	—	—	—
'95....	163	13	9·9	4·6
'96....	126	13	7·5	5·0

The following table[73] is given for the year 1892:—

Country.	Commitments.	Convictions per 10,000 of the Population.
Queensland............	10·8	4·8
New South Wales	11·9	7·6
Victoria	9·8	6·5
South Australia....	5·7	2·7
West Australia	16·6	10·3
Tasmania	7·0	2·8
New Zealand....	5·4	2·8

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[72] Statistics, 1896, and from information kindly given me by the Agent-General.

[73] "Official Year Book, 1895."

South Australia.

South Australia[74] set the example, followed now in Canada and some of the United States, of forbidding the trial of children in ordinary police courts, at least in Adelaide; if unavoidable in other places, it must be at a different hour from other trials. The hearing of cases connected with juveniles may be held in certain "places" approved by the Chief Secretary for that purpose, the office of the State Children's Council in Adelaide being recognised by the Government as that special place, while the officers of the council have power to investigate all such cases. While waiting trial the children (boys under 16, girls under 18) must be kept under proper control, at a depôt or office or institution, but not in jail nor in a police station, and they are tried apart from other police cases by a special magistrate. The court meets whenever there are cases; the only persons present at the trial, as a rule, are the magistrate, his clerk, the children, their parents, and an officer from the Children's Council. The judge may order all persons not concerned in the case to leave. Contamination is thus avoided. Applications for the committal of children to reform or industrial schools are also referred to the State Children's Council. There is, therefore, no need for those under 16 (18 if girls) ever to come into contact with a police court or station. Magistrates, police officers, and all officials alike speak in great praise of this system. The criminal records of South Australia are very good, and serious crime is almost unknown; in fact, the commitments are, proportionally, lower than in any country I know except New Zealand. There is no "criminal class," and there are hardly any juvenile offenders: they are decreasing in number.

All destitute, neglected, uncontrollable, and criminal children up to the age of 18 come under the care of the State Children's Council (appointed in 1886). They have about 1,000 children under their care, supported by a parliamentary vote; but the parents contribute some 1,100*l.* annually. They may be ordered to pay from 2*s.* to 10*s.* a week. Children convicted of punishable offences, and those who require the discipline, in the opinion of the judge, may be committed to industrial or reform schools; the Council appoints all officers connected with these schools or with those that deal with criminal children. Inmates of industrial schools may be transferred to reformatories if incorrigible or uncontrollable, or *vice versâ* for good conduct. The children in reform schools must be classified, and may rise by good conduct to classes having special privileges, or *vice versâ.* Girls may be kept in industrial schools till they are 18; as a rule, however, nearly all the inmates both of reformatory and industrial schools are boarded out, on payment, till they are 13, but reformatory school inmates must remain for one-third of their sentence. Juvenile criminals, and these only, may be sent to reformatories to remain until 16 or 18, or a shorter period, but not less than one year; or they may be licensed out, apprenticed, &c.; or the parents may be required to give security for the child's good behaviour till he is 18, or such age as the judge fixes; or the case may be dismissed if some relative undertakes to give such punishment as the judge approves; or the child may be punished and subsequently sent to a reformatory. In the case of a first conviction, the child may be sent to an industrial school, if he appear suitable. If a convicted child is over 16 when committed, an order may be given to detain him two years, that is till past 18, otherwise no child remains under the Council beyond that age, unless a girl, under special circumstances, by order of the Governor. The Governor may order the release or longer detention of inmates of reformatory and industrial schools if deemed necessary. A judge may order a boy under 14 a whipping of not more than twelve strokes if incorrigible, or he may be released on probation, remaining under supervision till 18; if still unsatisfactory, he may be sent to a probationary school for three months. The Act orders all jailors to take all children in, or sent to, prison before a judge, who may, if he think fit, send the child to a reformatory for the unexpired term of imprisonment, if not less than six months.

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[74] Statistical sketch of South Australia. Destitute Persons Act, 1881, amended 1886; State Children's Act, 1895, and other Acts; Reports of State Children's Council, with laws; Australasian Conference on Charity, &c., &c. Juvenile Offenders Act.

Victoria.

The first legislation in this colony was in 1864,[75] when the Neglected and Criminal Children's Act was passed, establishing industrial schools for destitute and neglected children under 16, and for juvenile offenders too young for reformatories. In 1890 the age was raised to 17, and for uncontrollable children to 15. Boarding out was legalised in 1874, and in 1878 the transfer of inmates from industrial schools and *vice versâ* was authorised, while the term of *control* was raised to 18. In 1887 boarding out was extended, and the opening of fresh reformatories or industrial schools forbidden, while probationary schools for the temporary care of juvenile delinquents and for refractory cases were established. In no case must the detention exceed six months, while the age of committal was raised to 17 for both reformatory and industrial schools, the lowest age for the former being 12, those under that age being given to the Department for Neglected

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[75] Neglected Children and Juvenile Offenders Acts, Victoria.

Children. Imprisonment previous to committal to a reformatory was made illegal. All reformatory and committed children were made wards of the State till 18, or even 20 in certain cases. If juvenile offenders over 12 do not appear vicious, they may be given to the department instead of being sent to a reformatory; offenders under 18 may be transferred from jail to a reformatory, while all criminals under 17 must be sent to a reformatory, not to a jail. Sentence of committal to a reformatory may be suspended, and release to suitable guardians given on bail, and sentence on first offenders under 21, and even on these under 25 at the discretion of the governor, may be suspended, and the offenders placed on probation instead.

New South Wales.

In 1897 there were fewer prisoners than in any year since 1883, though the population has increased; few children are now committed to prison.

Criminal children[76] under 14 may be committed to reformatory or industrial schools, or to authorised homes, instead of to prison; they may also be boarded out, or adopted by the State, or apprenticed by the managers of the institution.

Further details as regards the treatment of juvenile delinquents in Australia and elsewhere are omitted for want of space.

Summary and Suggestions.

Certain conclusions force themselves upon the mind on reviewing the statistics here collected. One is, that the methods hitherto employed for the repression and the punishment of crime have largely failed, as far as the reduction of crime or the reform of the criminal is concerned. The countries where crime is decreasing are those which have adopted widely both preventive work and such modern ways of dealing with criminals (first offenders in particular); as (1) the indeterminate sentence; (2) release on probation with certain safeguards; (3) reformatories for "adult-juvenile" offenders; (4) the most stringent regulations against drunkenness.

Of the success of preventive work, Ireland affords an unexpected and striking example. Juvenile crime has there diminished 39 per cent. in twenty years, and forms only 0·6 per cent. of the total crime, falling, especially among girls, more rapidly than in any European country.[77] Among 10,000 female prisoners in 1896, only

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[76] Children's Protection Act, 1892, New South Wales.

[77] The population decreased 13 per cent. in the same period.

16 were under 15 years of age; forty years ago 1 prisoner in 5 was under 16, now not 1 in a 100, and not 1 in a 1,000 is under 12; though even that is one too many. The Protestant Female Reformatory is closed for want of inmates, while the total number of girls admitted during the last four years to reformatories in the whole of Ireland has never exceeded 16 in any year, and the total admissions, both boys and girls, have diminished one-half in twenty years. The chief causes leading to this reduction appear to be (*a*) the rapid increase of education; in fifty years the number of illiterates has been reduced from 53 per cent. to 18 per cent. of the population, and (*b*) the splendid preventive work of the Industrial Schools. There are more girls in Ireland in these schools than boys, more indeed than in the whole of England and Wales. As to crime in general, Ireland is no exception to the facts noticed in other countries; the total offenders in 1895 increased to 3,995 per 100,000 of the population (though serious offences have undoubtedly decreased), and the arrests for drunkenness show a correspondingly marked increase. Apart from drunkenness and offences committed through drunkenness, female crime is almost non-existent in Ireland.

The best examples, however, of preventive work are afforded in the countries of New Zealand, Ontario (Canada), and in the States of Massachusetts, Michigan, and Minnesota. In these States, children morally neglected, as well as those physically neglected, become wards of the State, parental control is forfeited, and yet the numbers of children dependent on the State show a marked and constant decrease. In Massachusetts there has been a reduction of 50 per cent. in twenty years, and in Michigan and Minnesota even more, 70 per cent. This splendid result is in part due to the States beginning their preventive work at a much earlier age than we do, and also to their doing it much more thoroughly, and giving longer supervision. It has been noted that the inmates of our industrial schools are physically below the standard of ordinary school children; in Elmira, New York (for male first offenders), the same has been observed; no less than 66 per cent. of the inmates are physically degenerate. Strength of will depends upon strength of body as well as of mind, and to obtain this, especially in those inheriting evil tendencies, proper care and treatment cannot begin too young.

Preventive work in England requires to be greatly developed, and the methods largely changed, before it can ever attain the success that has been obtained elsewhere.

The following changes appear to me urgently needed: (*a*) entire deprivation of parental control where the parent is obviously unfit for his duties, where neglect, either moral or physical, is persistent and wilful;[78] and (*b*) the infliction on the negligent parent of punishment, in the form, if possible, of payment towards the child's support. That this idea is not chimerical is proved in New Zealand, where nearly half the cost of State-supported children is recovered from the parents. My own experience confirms this; for, by careful oversight, the parents of children in the Home with which I am connected contribute about a third of the total cost of the support of the inmates. In Massachusetts employers may be required to pay part of a man's earnings direct to his family. England allows parents, who fulfil none of their duties, still to retain their rights even to the manifest injury of their children.

It should also be part of a policeman's duty to arrest children who are known to be drifting into crime, through bad companionship, or other cause, bringing them up for committal to industrial or other schools. As far as Ireland is concerned, I have rarely heard of any policeman getting children committed to industrial schools, though they must constantly come into contact with those who are eligible for admission.

As another preventive step, much more stringent laws need to be passed as regards tramps and "in's" and "out's." Vagrants and tramps are as yet almost wholly untouched, as far as the law in England is concerned. In this connection I may draw attention to the striking fact that the recently passed Belgian laws have resulted in the diminution of begging by one-half during the last three years. In France it is stated that tramp children are the most degraded of any type, and it has also been shown in Manchester and elsewhere, that these children seldom settle to a life of honest industry; while juvenile criminals are largely recruited from this class, and from street hawkers. Education, especially manual training, needs to be more strictly enforced and developed; yet one child in every eight, even in England, attends no school, and in Dublin the proportion is still higher.

It is well to bear in mind that crime arises largely from the *want* of something, a want probably easily and economically met in childhood; for it is usually a want of education, of a trade, a home; want of moral control; or even, as already proved, want of food, resulting in physical degeneracy. A large proportion of prisoners are almost entirely uneducated (96 per cent.), pp. 192 and 196, and unskilled in work (76 per cent.), pp. 235 and 243.

As regards the treatment of juvenile offenders, we can learn much from those countries where crime is diminishing. New

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[78] In France, Switzerland, and Belgium, negligent parents may be sent to Houses of Correction.

Zealand has, I think, the lowest proportion of criminals, and shows a decrease of 17 per cent. in fifteen years, and a decrease of arrests for drunkenness of 50 per cent. in ten years. Canada also shows a marked decrease in both adult and juvenile criminals, and a decrease in vagrancy and in drunkenness, though 67 per cent. of the prisoners are committed for drunkenness. In Victoria juvenile delinquents have decreased (32 per cent.), as they have in South Australia, Massachusetts, and the other States already referred to. These countries all have what England still needs:—

(1.) *Separate trials of juvenile offenders*, and a complete separation of juvenile offenders from adults during their trial, while awaiting trial, and while undergoing punishment.[79] Imprisonment of children, or indeed of any first offenders, has been almost abolished in the countries named.

(2.) *Extension of the First Offenders Act*, so that, at the discretion of the judge, all first offenders may be released on probation, conditionally, and subject to recall. To carry this out with the success achieved elsewhere, probation officers are an absolute necessity. These officers should be entirely distinct from the police, in order that no visible slur may be cast upon those placed under their supervision. Their duty should be to make inquiry into the homes and circumstances of first offenders, and to give subsequent supervision to those conditionally released. Far greater supervision is also required over the children leaving reformatory and industrial schools.

The *indeterminate sentence* is largely used in America, even in the case of children sent to industrial schools, the sentence given being frequently "to be confined till there is reason to hope for "reform." When habits of industry have been formed, it is often considered safe and wise to release inmates. It certainly seems folly to release a prisoner just because he has served a certain time, when it is known that he intends to return to a criminal career as soon as he is set free, but the indeterminate sentence would probably be considered to leave too much to individual discretion in this country.

Far more stringent regulations need to be made against drunkenness, instead of making it, as now, a plea for mitigated penalty for offences committed when under its influence. Contrast New Zealand, and its freedom, comparatively, from crime, since arrests for drunkenness are only 8·5 per 1,000 of the population, while in Ireland the arrests for drunkenness are 19 per 1,000. Statistics show that the children of drunkards inherit vicious tendencies and enfeebled wills, and that they largely people our charity schools, and our prisons and asylums; in one prison it was shown that 40 per cent. of the criminals inherited criminal instincts, in another 78 per cent. came of criminal and drunken families (see also France, p. 207). In Switzerland half the juveniles sent to correctional institutes have drunken parents.

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[79] Children should also be rigidly excluded from police courts and yards, confined apart from adults, and conveyed, if guilty, to prison in separate vehicles, not in the common prison vans.

We may spend money for ever, and uselessly, so long as men and women are at liberty to drink themselves and their children into a criminal life. The remarkable freedom from drunkenness among Jews, largely accounts for the rarity (in the United States, at all events) of Jew criminals and Jew paupers. Sixty per cent. of all the offences in Massachusetts in the last twenty years are traceable to drink; in England the proportion in crimes of violence is 75 per cent. One-fifth of juvenile crime is due to drunken parents; yet in the last forty years arrests for drunkenness have doubled in England. The punishment awarded is obviously inadequate, though the public have largely to support the children of drunkards, who yet do not lose their control, except in the few cases that come under the Children's Protection Act. And this Act does not apply to Ireland, nor does the Married Women's Protection Act, though even a lawyer might be puzzled to explain why an Englishwoman or child requires the protection these Acts afford against a drunken father or husband, from the benefits of which an Irishwoman and an Irish child are excluded.

Another reform needed is a *special reformatory for first offenders* over the age of 16 (the present limit) up to, say 21, and the entire abolition of imprisonment of juveniles. A more elastic sentence to reformatory or industrial schools than our present stereotyped one of five years seems desirable.

The separate trial of juveniles might be accomplished without expense by certifying certain existing homes or schools as suitable places for such trial, and by utilising these as temporary shelters for children awaiting trial; or, as in our colonies, they might be given in charge of a constable who has a suitable home.

In conclusion, for the reduction of crime, the main step needed is first to check the growth of the criminal class, a growth largely due to the absence of moral control at home; this control must therefore, for its own safety, be undertaken by the State; then, after preventive work has done all it can, the improved reformatory measures just specified must be resorted to. Our precautions begin too late, and stop too soon; we carefully safeguard those with evil tendencies till they are 16, and then send them into the world at the most critical age of all, with next to no protection.

I am much indebted to my correspondents, especially many in

America and Australia, who have so kindly sent me copies of all laws in their respective States relating to children, so that I have been able to embody those passed so recently as October, 1898 (Massachusetts and Ontario), and April, 1899 (Illinois), while most of my American statistics are brought to the close of 1898, some even later, so promptly are they published. I would specially name with gratitude Mr. J. J. Kelso, Superintendent of the newly-formed Government Department of Neglected and Dependent Children in Ontario; Mr. H. H. Hart, Secretary of the Charities Conference; the Hon. C. Randall, founder of the Michigan system; the Hon. W. P. Reeves, Agent-General for New Zealand; and M. Thiry, Professor of Criminal Law, Liège, Belgium.

It has been far more difficult to obtain statistics from England and from European countries than from America or the Antipodes.

Discussion *on* Miss Barrett's Paper.

Professor Hull, having remarked that Miss Barrett had personal experience in the management of an industrial home at Kingstown, said that one point which was pretty clearly brought out in the paper was that drunkenness was at the root of the demoralisation of these juvenile offenders. For their parents, by heredity, transmitted a taste and aptitude for drink to their unfortunate offspring. The gratitude of the nation was due to those who placed the youthful waifs in homes and gave them opportunities of escaping their unfortunate surroundings. The paper which had been read showed much care and research on the part of the author, and would be of use in helping to enlighten the public on one of the most important social questions of the day.

Mr. W. Chance said that it was now felt that if crime were to be diminished, the work must be commenced by getting hold of the children early. He was particularly interested in the vagrant classes, and there it was found the numbers were increasing, and that the children of the habitual vagrant escaped proper education altogether. They could, therefore, only drift into crime. Recent returns showed that there were about 250 to 400 such vagrant children in casual wards on any one day. There would be, of course, many more distributed through the country on that day in common lodging-houses or otherwise. Miss Barrett took the view, which would probably be disputed by a great many people, that the State ought to take children away from those parents who were not able to bring them up properly. That had already been done to a certain extent by an Act of last year, by which powers to adopt the neglected children of parents who came upon the rates were given to boards of guardians. It was to be hoped that that Act might be useful, and that a considerable number of children who were likely, unfortunately, to recruit the criminal classes, would be turned into self-respecting citizens. A further Bill dealing with vagrant children was now before Parliament. It was proposed that where vagrant parents were found habitually travelling on the highways with children, the police should have power to arrest them, and, if a *primâ facie* case was made out, the magistrates were to be given power to send the children to central poor-law or industrial schools, while the offending parent was to be punished. Similar powers were to be granted in respect of children who were found vagrant but unaccompanied by their parents.

The Rev. Dr. W. D. Morrison said that his own experience with regard to juvenile crime was that it arose from two sets of conditions. The first set resided in the child itself; the second in the circumstances in which it was born and had to live. He referred to the defective development, both physical and mental, of a portion of the child population. If there was a certain section of the juvenile population not strong enough to go among other people and earn their bread and compete with their neighbours in the economic work of the world, it followed that they must fall either into the unknown or into the prison. They must begin by removing the causes of juvenile crime. Till that was done all the punishment in the world would do exceedingly little towards diminishing juvenile crime. Until they removed the cause they would never remove the effect. He instanced the case of those children who lost their parents early, and were driven into common lodging-houses and the company of dangerous associates. Then there was the case of those young people who lost their employment through thoughtlessness or carelessness, and so fell into the army of crime. Then there were the children of degraded and drunken parents. Till the causes were removed, no whipping and no imprisonment would do any good. After the punishment was suffered, the offenders went back to their old surroundings and their old life. There were at that moment two Bills before Parliament dealing with the subject, and the authors of them seemed to imagine that if resort were made to whipping much more than had been the case in the past, they would succeed in diminishing juvenile crime. He did not believe it for a single moment. They would continue to have a crop of juvenile criminals, just as typhoid and other diseases would continue to live in our midst until the causes which produced those diseases were removed. Of course that opened out a tremendously wide question, because it meant starting to revolutionise a great many of our social conditions of existence. He was convinced that the first step to be taken in order to diminish pauperism, crime, insanity, and all those evils which hung round the neck of our civilisation and dragged it down, was to do our very utmost to remove the miserable social conditions in the midst of which the vast proportion of the people had to live. When those conditions were improved, then we might have an improvement in the condition of the juvenile community as a whole.

Mr. John Glover remarked on the sadness of the subject under discussion, which would be more marked if it were really the case that the original causes of crime were anterior to the children themselves, so that they never had an opportunity. He desired to point out the futility of comparing our statistics with those of newly-settled countries, say New Zealand, where social conditions were so entirely different from our own. There was, however, one satisfactory feature in the statistics, and that was the fact that great though the amount of juvenile crime might still be, it was now a great deal less than it was. The Ragged School movement, and the City Mission movement, and the effect of Mr. Forster's Act, which had now been in operation about thirty years, had not left them without good results, when he found it stated in the paper, no doubt truthfully, that "happily there are but one-sixth as many juvenile prisoners in England now as thirty years ago." Was not a reduction of five-sixths, in a population which had largely increased during the period, a very satisfactory result for one generation, especially in a country with our economic and industrial conditions? As statisticians they were aware that something might be due to changes in the method of collecting statistics and in methods of criminal administration; as a magistrate he knew that there was now a much more tender and sympathetic treatment of juvenile criminals than formerly prevailed. There was a much greater reluctance to send young people to prison, and a disposition to give them the benefit of the First Offenders Act wherever it was possible. He wished he could share the opinions Miss Barrett had promulgated in the paper as to the remedies suggested. He thought that deprivation of parental control was an impracticable prescription. A measure of that sort would involve too great a sacrifice of individual liberty, and would be unworkable. Parents rather needed bringing up to their responsibilities, not relieving from them. There had been far too much tendency in the legislation of late years to relieve parents of their natural responsibilities. It was very difficult to imprison parents for such "persistent neglect" of their children, and nearly as difficult to enforce fines. If any such course were attempted on a large scale, they would have the children in the workhouses and the parents in prison. As regarded Miss Barrett's second suggestion, of punishing the negligent parent by making him contribute to the cost of his child's maintenance, the same difficulty occurred. A man would not pay, and had to be committed to prison, and then his family and wife went to the workhouse. Miss Barrett indeed justified her recommendation by citing the case of New Zealand, where nearly half the cost of supporting the children was recovered from the parents. As he had said, he thought the conditions were so different that the case of New Zealand would not apply to their own. He, himself, looked to the more general spread of education and the increased sense of parental responsibility which was needed everywhere, and for which they must have patience. But he felt that the present condition of things was not a cause for depression, seeing that we had only one-sixth of the juvenile offenders we had thirty years ago.

Mr. John Macdonell thought that Mr. Glover had been a little too hard upon the proposals with which Miss Barrett had concluded her valuable paper. So far as he was aware, there was not in the literature of the subject, in English at all events, a paper so comprehensive or full in details, nor (subject to certain corrections and qualifications) one which showed so great a command of the whole subject. As a lawyer he saw no great difficulty either in framing an Act of Parliament to give effect to Miss Barrett's suggestions, nor in administering the provisions of such a law. Those upon whom the duty of doing so fell, would, it might be assumed, regard not merely the effect of sentences which they passed upon the children. They would also take into account the results to the parents themselves; so that, while ameliorating the condition of the child, care should be taken that such sentences should not be the means of enabling parents to shake off their responsibilities. He thought that Miss Barrett had attached too much importance to some statistics, especially those of foreign countries. Take, for instance, the statistics referred to by Miss Barrett with respect to the effect of certain systems in the United States, and particularly with regard to what were termed "lapses." The figures relating to some States of the Union were collected by officers in those States, who did not and could not know anything of the after lives of many of the persons trained under them, persons who six months later might be removed to Chicago, San Francisco, or New Orleans. As nothing was subsequently heard to their disadvantage, they may appear among the percentage of those who had not lapsed. It seemed to him that the gravest defect of criminal statistics was the absence of accurate local information. Examining only the statistics of a country as a whole, there could be only a dim idea of the changes which were taking place in the administration of the law, in the increased police supervision and vigilance, and in the temper and tone of the judges who administer the law. If, on the other hand, one selected a particular portion of that country, and examined the administration of the criminal law from year to year, in that area one would begin to have some clear idea of what was going on with regard to a particular class of crime. To illustrate how quickly and completely the administration of the law might be altered in our own country, he mentioned the case of an old woman who was some ten years ago sentenced by a Judge, humane according to notions then prevalent, to terms of penal servitude amounting in the aggregate to something like fourteen years, for offences which to-day would only be punished with a few days' imprisonment, even if she were not, on account of her age, let off altogether. The second part of the paper, namely, that which dealt with the remedy for juvenile delinquency, was probably the most interesting. He agreed in the main with what Dr. Morrison had said. But he ventured to think the outlook was more hopeful than Dr. Morrison's forecast, that slowly here and elsewhere there was rising, not very distinctly in some countries, but still gradually everywhere, a new system of dealing with juvenile delinquency far more effectual than that which had been attempted in the past. The past was chiefly a record of failures. The notion of vindictive punishment and of crime in regard to children's offences was being got rid of; the idea of education and improvement was taking its place. We had grasped the idea that the treatment of juvenile delinquents was part of national education in its larger sense. In an orderly well-regulated household, if a child fell into evil ways, there was a wholesome system of counsel or correction applied, now tenderly, now with severity. The children whom social reformers had to deal with were not found in well-ordered households; and the task before the legislature was not how shall the State punish young offenders, but how shall it act as a judicious parent to these children. The duty of the magistrate should be to inquire into the moral condition of the child, with a view to seeing what sort of education was required. The wealthy and middle classes were solving this problem for themselves. There were, as his hearers knew, in this country, open to children of wealthy and middle class parents, schools which dealt, and dealt successfully, with undisciplined children, who in other ranks of life would become juvenile delinquents. Similar provision must be made for the children of poor parents. As little as possible should there be attempts to deal with such cases wholesale, in large reformatories and industrial schools. The State should, as far as possible, deal with each case individually—very much as a wise parent would treat a child who had got out of hand.

In some respects we had really gone back in the treatment of criminals; we certainly had not much advanced. It might seem strange to refer for lessons in criminology and the treatment of criminals to such an author as Defoe, and stranger still to make reference to "Moll Flanders." But in the description therein given of the life of a thief in Defoe's time, it would be found that some sounder practices were prevalent than at the present time. Moll Flanders was sentenced to penal servitude, and her husband, who had been a highwayman, went out to Virginia with her. Almost as soon as they got out there they were allowed, in the natural course of things, to go into the interior, where, if they troubled no one, no one troubled them. It was taken for granted that in the life of a colony in those days the older criminals, and also the younger delinquents, would be absorbed in the large mass of society, of which they became honest members. The chief point he desired to emphasise was this: even though we might not like it, the parent in future for a vast number of children must be the State, which must undertake the greatest of parental duties, that of education.

Mr. William Tallack said he most cordially united with the gentlemen who had spoken as to the great value of the paper, and thought he had never heard one which had taken such a comprehensive and instructive view of the whole subject. He agreed with Dr. Morrison, that if we wanted to alter the effects of juvenile criminality, we must go to the causes. Just two points had struck him as illustrating that. Miss Barrett spoke of the great diminution of juvenile criminality in Ireland, and also alluded to the fact that within a few years juvenile criminality in Holland had doubled. That seemed to him to show the importance of religious training in dealing with this question. In Ireland, both among the Protestants of the north, and among the Catholics generally, the ministers paid very great attention to the religious interests of the young. On the other hand, in Holland, owing to various causes, such as antagonistic religious sects and agnostic influences, religion was excluded from the schools. This question also raised the whole subject of the housing of the poor, and, in short, almost every social question, notably intemperance. They had heard much in the paper about the effects of drunkenness in relation to juvenile delinquency. The Government should be urged to act upon the recommendations of the late Royal Commission on the Licensing Laws. The adoption of those recommendations would certainly go to the root of a great deal not only of juvenile, but also of adult, criminality. He thought there might be more control exercised over habitually negligent parents, especially the vagrant classes, who dragged their children about with them and trained them up most certainly in the paths of crime. He thought there was a great deal to be said for the view of the late Edward Denison, M.P., as expressed in his biography, edited by the late Sir Baldwyn Leighton. In this a mine of information on the subject would be found. It was Edward Denison's opinion that if the children of the pauper classes were taken from their parents for at least two years, and boarded out, or put in suitable schools, that would break the neck of pauperism in twenty years. He cordially united with those who had spoken in favour of the enforcement of parental responsibility. A few years ago the Government brought in a measure—which unfortunately was crowded out—by which it was proposed by Sir Godfrey Lushington, who was a very practical authority by reason of his long connection with the Home Office, to make parents alive to a sense of their responsibilities by the infliction of small fines, ranging from 1*l.* to 5*l.* as a maximum. If such an Act were passed, he thought that the influence it would exercise, though perhaps limited, would be very useful.

Mr. Jesse Argyle pointed out the great difficulty there was in getting hold of the lads between 16 and 20. There were almost any number of agencies for dealing with them before that age. He instanced the school boards, voluntary schools and the Sunday schools—organisations which reached every class, even to the poorest and most neglected. But directly these lads got to be about 15 or 16, an age when parental control failing, if it ever existed, they especially needed looking after, they broke away from the Sunday school. He supposed that not one in ten were kept after that age. The only thing that really seemed to be done with any success was the formation of lads' clubs, but that was only on such a minor scale that it touched a very small proportion of the lads. Even these clubs were closed to the boys on the day they most needed looking after, viz., Sunday, when they spent their time in most undesirable ways. The fact must be recognised that they would not go to Sunday schools; they would not be brought directly under religious influences, and it was of no use to keep up the mistake of saying, "We will have nothing else on Sunday but religious influences." They saw how on Saturday afternoons these boys were healthily occupied in their games and sports. The occupation which their games gave them must be offered them on Sunday. He therefore advocated the opening of lads' clubs, with plenty of athletics and other means of rational and healthy enjoyment, to keep them out of mischief and temptation.

Mr. HENRY MCNIEL maintained, in spite of all Mr. Glover had urged, that where parents notoriously neglected their responsibilities, it was the duty of the State to step in. There was one thing which he would like especially to press upon the Society, and that was, that the class of parents alluded to regarded their children as an "asset." The children of many poor parents were, even at an early age, sent out into the streets to earn something, and if they could not get work, they were virtually forced to thieve, for when they came back at night, they had to bring a certain amount of money with them, or they were punished unmercifully. If parents who did not look after their children properly, were called upon not only to forego the children's earnings, but also to pay a certain amount for their maintenance, in whatever institution they might be placed, it would put the very strongest pressure upon such parents to do their duty. Drunkenness had been alluded to as a most fruitful cause of the breeding of crime. He wished that drunkenness on the part of parents should be recognised as a reason for taking away their children, and compelling them to pay a certain amount towards their maintenance in an institution. In that way he thought we might go to the very root of the matter; for in considering the question of taking away children from the control of neglectful or drunken parents, where the longer they remained the worse they got, we should remember that such a step would be more potent than any other, for such parents would be more constrained to look after their children and to keep sober, by fear of losing what they regarded as a valuable asset, than by any other form of pressure which could be put on.

Mr. E. A. HASTINGS JAY said that, as Secretary of a Committee of the Charity Organisation Society in a district of the East End of London, he could corroborate most strongly what the last speaker had said as to the want of any feeling of responsibility on the part of the parents. He found that at the East End it was very difficult for boys and girls leaving school to know to what to turn their hands for a living; their parents could not or would not advise them. He thought that school managers might very usefully take more interest in the future of the children by studying the conditions of trade and the openings that were available for them, in regarding not so much the immediate earnings, which were all that the parents thought of, as the future prospects when the children became men and women; then, instead of the idle loafing class which was growing up, we should get a class of decent citizens able to command a good wage. The reason why there was so large a class of unemployed was not because there was no work going, but because there were a number of people who were incapable of being useful members of society. If therefore teachers could be got to take an interest in the children just at the time when they were leaving school, he thought we should be taking a large step towards lessening this increasing class of loafers and criminals. School managers could do much to assist the teachers, who were too busy themselves to accumulate the necessary information.

The CHAIRMAN (Sir FRANCIS SHARP POWELL, M.P.) said that for a solution of their difficulties he thought they must look both to philanthropic effort and to the action of Parliament. He himself had far more confidence in individual efforts than in statutes. It was comparatively easy for a powerful Government to pass an Act of Parliament, but it was by no means easy to carry that Act into effect so as to ensure results commensurate with the efforts made. When, however, they came to personal effort, he thought they were on a safe and right course. He believed that much blame in this matter rested with the school board authorities. One borough with which he was intimately acquainted was at present proud that in the hands of the existing school board there was a diminution of the efforts made by the school attendance officers. But the effect of that laxity had been to diminish the number of children at school, and he felt confident that if that evil policy were pursued, the diminution of the number of children in the schools of that great city, would be followed by a large and corresponding increase of crime. In examining the judicial statistics, he had been much struck by observing the number of cases of larceny amongst these young people. He was far from saying that the youthful mind had not a natural tendency to theft, but when he saw the large number of larcenies committed, he could not help thinking that there must be amongst the population those who taught larceny. Probably much might be done to repress juvenile crime if more pains were taken to stay the hand of evil teachers and wicked counsellors who guided these young people into wickedness and sin. Looking at the situation as a whole, he thought there was far more ground for hope and encouragement than for despair. He was much struck with the fact that even with a larger population, the number of juvenile delinquents was only one-sixth of what it was thirty years ago. That fact should not be lost sight of, for it showed that those who had laboured in this cause had had some reward for their endeavours. He had also been much struck by what had been said as regarded Sunday afternoons, and there were few things which he wished more than that the Sunday question might be handled in a large, a liberal, and a comprehensive spirit. Not only with regard to the young people with whom they were now concerned, but with regard to English society generally, the Sunday problem required thorough investigation. Owing to many circumstances, the facilities for locomotion, and the early closing of places of business on Saturday, a great change was no doubt coming over the habits of the people as regarded Sunday. New problems had to be faced, and new difficulties had to be dealt with. The conduct of young people between 12 and 20 years of age was only a branch, and perhaps not the most important branch, of a more extensive question.

The CHAIRMAN concluded by moving a vote of thanks to Miss Barrett for her paper, which was carried unanimously.

The following reply has since been received from Miss Barrett:—

I am grateful for this opportunity of replying to the discussion upon my paper, and very sincerely thank the speakers for their kind words. Some of the points raised, such as the treatment of pauper children, boys' clubs, &c., lie outside the scope of the paper, and I do not therefore propose to say anything on those subjects. As regards the various preventive and remedial measures suggested, it is true that we cannot institute too close a comparison between new and thinly-peopled countries and our own; but when we find that certain measures have invariably proved successful in checking crime and in reforming the criminal wherever they have been tried (while it is generally acknowledged that our own methods have largely failed in both these aims), we may certainly believe that it is the *method*, not the *country*, that needs changing. It is to be hoped that one preventive measure—the Children of Vagrants Act—may speedily become law, so that this large and, alas, increasing class of children may at last be brought under educational and reformatory influences. I think, however, that the care of such children should be a State and not a county charge, since the greater number belong to no place in particular, and, in order to escape an increase of county rates, the authorities in districts where such children are found may hesitate to arrest them. This change of responsibility has been found necessary in Belgium, where recent laws have effected a striking diminution in this class.

Other speakers dwell on the difficulty of the State coming between a parent and his child, and taking the parent's place; but it seems to me that one great error of our present English system is, that while charity and the State do already to a large extent take the parent's place in educating and training neglected children, the parent not only receives no punishment for his neglect, but is generally allowed to resume control (after years of cost to the community) at the most critical age, 16 or so, and just when the child is likely to be a source of profit, instead of an expense. In most other countries, not only in America and our colonies, but on the continent, the neglecting parent is punished and deprived of control over his child (unless he can prove reformation of character); thus the costly work of training young children is not nullified, as it is with us in too many instances. The effect of these foreign laws is, in the first place, that the work of reformation is much more permanent, and, in the second place, that parents become less negligent, since few like entirely to lose sight or control of their children, though very willing not to take any trouble so long as other people can be found to do their work.[1]

Fact is stronger than theory, and experience proves that the tide of child misery and neglect can only be checked by legal restraint upon the parents, by their punishment, and by the entire removal of the children where the parents are incorrigible. It is by no means impossible to make them pay towards the support of their children, as experience proves.[2]

Mr. Glover is mistaken in saying that my statistics show that juvenile *offenders* are only one-sixth as numerous as they were thirty years ago. I most carefully (as I thought) pointed out the fact that though juvenile *prisoners* were only one-sixth as numerous as they were thirty years ago, this did not mean that offenders had decreased, but only that methods of dealing with them had changed. Reformatories have been established, some are released on probation, some are whipped, &c. As a matter of fact, criminals from 16 to 21 years of age are increasing in England and in Scotland,[3] sad to say; pointing to some grave error or omission in our system. For this reason I dwelt at length on the systems adopted in those countries where—and where alone in all the world, as far as I can ascertain—this class is decreasing. These may not all be applicable to an old and densely-populated country like England, but, on the other hand, prison workers and officials are amongst those who are most anxious for changes to be made in the English system. They specially advocate the establishment of reformatories for first offenders over 16 years of age, such as those in the States of New York and Massachusetts, which have there proved so singularly successful, though the inmates are apparently hopeless enough on admission. Most are deficient in bodily and mental vigour and in moral sensibility; many are intemperate, yet after a comparatively short detention it is found safe to release the inmates on parole, and only 4 per cent. of these return to jail. The first step towards reform is to produce a healthy condition of body, and then of mind, by physical training and by elementary and trade instruction, so that on discharge the inmate may be able to earn an honest living. The ability to make something is often the first step towards self-respect and self-control. I much hope that before long separate trials of children and separate places of confinement will be instituted. It is true that children likely to appear in the police courts have probably been mixing all their lives with thieves, criminals, and the criminal class, but the very object of arresting them is surely to place something better before them—to reform more than to punish, and this cannot be effected without cutting them off from contaminating influences. When the Quaker philanthropist said: "Friend, thee should have better thoughts," the prisoner justly asked: "Where shall I get them?" The words once said by Pope Clement XI are as applicable now as then: "Parum est coërcere improbos pœnâ nisi probos efficias disciplinâ."

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[1] The report for 1899, which I have just received from the Department of Neglected and Dependent Children, Ontario, confirms this in a striking way. The superintendent says that the law of 1893 (empowering the Court to remove children from vicious control and annulling parental control) has "led to the strengthening instead of the weakening of parental ties, for many parents who lightly regarded their responsibilities have developed a sudden affection for their children, when they realised the possibility of losing them." Much neglect and misery is checked, and "the number of those who form the criminal and worthless classes will be materially reduced in the near future."

[2] I may perhaps quote my own experience of work in the most difficult of all countries, where for centuries self-help and self-respect have been strangled by perpetual doles, and where poverty is perhaps greater than in any other country in Christendom. Yet even here so entirely novel an idea as that of making parents contribute towards the support of their children when in an institution has proved practicable and successful, even by a private individual without any legal or official authority.

The amount paid may be small (in some cases the wages earned by the parents are only 6*l.* a year), but paid it is, and faithfully; and I think I am within the mark in saying that bad debts do not average 1*l.* a year since this home was opened, and that not half a dozen children have been deserted, though the parents are working in all parts of Ireland, so that personal knowledge and oversight is impossible in many cases. This, however, is but a small effort. Moreover, in Ireland parents may desert their children for years, and leave charity to support them; but whenever they choose to return (though, as has happened within my experience, they are unable to recognise their own children), the law compels me to hand back the children to them, whatever the character of these parents. This is not necessarily the case in England now.

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[3] I am somewhat at a loss to explain why Ireland (so erroneously thought to be a specially criminal country) is so extraordinarily free from serious crime. With a smaller population, Scotland has an enormously greater number of prisoners (almost twice as many in some years), while serious offenders are only 16·6 per 10,000 of the population in Ireland, as compared with 25·4 per 10,000 in England. The convicted prisoners for all offences in Ireland are but 7·3 per 1,000 persons; in Scotland they are 12·6 per 1,000! Convicts, both male and female, show an extraordinary decrease in Ireland, and one is forced to believe that instead of the Irish being a naturally lawless offensive people, as so many think, they are in truth naturally law abiding and well behaved beyond most peoples. Whether this is due to their deep religious instincts, or to other causes, it is not for me to decide.

On the CONSUMPTION *of* ALCOHOLIC BEVERAGES.

By H. BENCE-JONES, B.A.

[Read before the Royal Statistical Society, 24th April, 1900.
A. E. BATEMAN, Esq., C.M.G., Hon. Vice-President, in the Chair.]

I HAVE been asked to speak to-day on the subject of the Drink statistics of the world.

It is a large and interesting, one might almost say a fascinating, subject. It has interest for all classes, from the Chancellor of the Exchequer (if he can be called a class) downwards, for those who drink, and for those who do not drink; indeed, the subject seems to have as much interest for those who do not drink, as for those who do. To those who do not drink, the statistics of drink in our Colonial possessions—those greater Englands of the future—will indeed be an encouragement; but of that I shall have more to say anon.

In the official statistics of drink prepared by the Board of Trade, wine, beer, and spirits only are dealt with; but there is one other article of drink which will, I think, at once suggest itself to everyone here as an article of large consumption both in this country and in France, and that is cider. In France the statistics with regard to the production of cider (see Statement IV) are very complete. In that country the production of cider has always been large, approaching almost in some years to the production of wine. Thus in the year 1895 the production of wine was 26½ million hectolitres, the production of cider 25½ millions. It is a large amount, the hectolitre being equal to 22 gallons. The largest amount of cider produced in France in any one year since 1850 was in 1893, when it amounted to 31½ million hectolitres, but then 1893 was a bounteous year, and the production of wine in France amounted in that year to over 50 million hectolitres.[1]

It might be suggested that such figures could with advantage be added to the official returns relating to drink. But any such publication would at once suggest the question, "How do these "French figures compare with our own, which must also be "large?" They cannot be compared, because unfortunately our own do not exist. I think some of our friends of the Board of

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[1] See Table IV in Appendix.

Agriculture are present; no doubt they think such figures will not be wanting long.

The statement relating to the production of cider in France to which I have referred, and which is given in the Appendix IV, shows how much cider has been used in late years for the purposes of making brandy. In France, in some years of late almost as much of cider as of wine has been converted into brandy. Indeed, the whole statement showing the various substances from which spirit is distilled in France, which is published by the French Government (see statement in Appendix V), is very interesting. It shows that since the seventies brandy, *i.e.*, burnt wine, has almost ceased to be produced in France, the proportion of brandy to the total spirit production since 1880 being under 3 per cent. of the total; that is to say, out of every 100 bottles of spirit produced in France, not more than 3 bottles can be regarded as genuine brandy. Some are of opinion that almost all the genuine brandy made comes to England. Some again think that almost the entire quantity is bought by the champagne growers of Rheims, and goes to fortify the fine dry wines of that district—*goût anglais*, so that it also, eventually, finds its way to England.

I have only alluded to this cider production incidentally, however. I will now proceed to speak generally of the salient figures, and the results which the official statistics show with regard to the world consumption of alcoholic beverages, that is, of wine, beer, and spirits.

And first of wine. Sunshine has been described as the wine of the poor, and wine as bottled sunshine, and it follows that naturally where sunshine is there is wine—that is to say where the inhabitants are sufficiently advanced in civilisation to bottle their sunshine. This is pre-eminently the case on the shores of the sunny Mediterranean; and there is scarcely a country bordering on that inland sea which is not adapted by nature, if not by art, to the cultivation of the vine. It follows from this that the national everyday drink of the inhabitants of those countries is wine, just as much as the everyday drink of the Saxon and Anglo-Saxon races is beer; and it is of interest to place in juxtaposition the number of gallons of wine consumed per head in the chief Latin nations of the Mediterranean, and to compare these with the number of gallons of beer consumed per head by the chief Saxon races. Thus we find that of wine France consumes per head, and on an average, 24 gallons, Italy 20 gallons, and Spain 18 gallons; whilst of beer there is consumed per head in the United Kingdom over 31 gallons, in Germany 27 gallons, and in the United States 13 gallons. If the actual bulk of the wine therefore consumed amongst the Latin races is enormous, so also is that of the beer consumed by their Saxon contemporaries. But there is one point of divergence, namely, that the wine production of the world does not tend to increase; on the contrary, it tends—owing partly to the phylloxera and partly to other causes—to decrease; whereas the production of beer—its consumption follows—goes on always increasing. I do not assert that it is so. I merely throw it out as a suggestion; but to me there seems a strange analogy between the ratios of increase and decrease in these articles of consumption, and the increase and decrease, or stagnation, of the populations.

However that may be, let us turn again to the alcoholic beverages. In all this mass of figures prepared in the Board of Trade with regard to them, one salient feature stands out, namely, that it is what the mass of the population drinks, *that* makes all the difference. Thus in England, in Germany, in the United States, the rich man's wine stands for almost nothing as compared with the poor man's beer. I may put it in other words, and say that the imported article, which is expensive, has no chance with the home-made article, which is relatively cheap. And in this connection it may be observed how clearly these tables relating to alcoholic beverages bring out the fact that the liquor trade is in nearly every country almost entirely a matter of home industry, and not of foreign production.

We in this country, where all wine and an appreciable amount of spirit are imported, are perhaps not so fully aware of the fact as they are in other countries; but the statistics of trade, when placed alongside of those of production, show it irrefutably, as also do the statistics of revenue. Why, even in this country no less than 84 per cent. of the revenue derived from the taxation of alcoholic beverages is levied on the home-made article, whilst in other leading countries over 90 per cent.—in the United States as much as 96 per cent.—of the revenue from drink is derived from excise, that is from the home-made article, made in the country where it is consumed.[2]

The Tables to which I have referred bring out another fact with regard to this trade which is of interest, namely, that wine is an article of commerce in far greater proportion than either beer or spirits are. The fact may be accounted for, I think, in this way: wine is produced in the south in the countries of the sun, and the northern nations, which are for the most part active and rich, buy it in some quantities. It is singular, however, how little beer and spirits, which are for the most part the productions of the north, the countries of the south are willing to take in return, the import of these articles into countries such as Italy, Spain, Portugal, and Greece being singularly small, and not increasing either.

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[2] See Table I in Appendix.

The great French writer Montesquieu said that drink, both as to the nature and quality of the liquor drunk, was chiefly a geographical expression. I have come rather to the conclusion that it is chiefly a matter of ability to pay, both as regards the quantity and quality of the liquids drunk, and that given the ability to pay, a matter which depends very largely on commercial prosperity both in this and in many other large countries, there is scarcely any limit to the absorbing interest the masses will take in this question of alcoholic beverages. The recent statistics of the United States demonstrate this point in a remarkable degree, and as commercial prosperity returns to that country, as it is doing at this moment, it will be of considerable interest to watch its effect on the drink statistics of that, statistically speaking, most interesting country. Taking the statistics of the past as regards the United States, we see that the consumption of beer (the consumption of wine fluctuates so much with the harvest, and is moreover so small that we cannot take that), which in the year 1892-93 was 895 million gallons, was in the year 1896-97, before commercial prosperity had begun to return, 890 millions, the *per capita* consumption having decreased from 13·4 gallons to 12·2 gallons. The consumption of spirits, which in 1892-93 was 84 million gallons, was in 1896-97 61 millions, the *per capita* consumption decreasing from 1¼ gallon in the former period to 0·84 of a gallon in the latter. In 1897-98 there was in the United States some slight tendency to an increase in the consumption both of beer and of spirits; whether, however, this is due to returning commercial prosperity, as I am inclined to take it to be, will become more apparent in future years.

The statistics, it may be remarked, of the Dominion of Canada over the period 1892-97 show the same marked decreases in the consumption of spirits and the same steadiness, or want of increase, in the consumption of beer, as do the statistics of the United States, and point to much the same results. Thus in the Dominion the consumption of beer in 1893 was 17½ million gallons, in 1897 it was 18 millions, the *per capita* consumption being in each case 3½ gallons. The consumption of spirits in 1893 was 3·7 million gallons, in 1898 it was 2·9 millions, the *per capita* consumption having decreased from three-quarters of a gallon to 0·55 of a gallon. The statistics of the Dominion therefore show very much the same results as regards the consumption of liquor as do those of the United States.

Before leaving the United States I may, although it does not directly come within the scope of this paper, perhaps be permitted to refer to another subject which, taken in conjunction with the decrease in the use of the alcoholic beverages most affected in that country, namely, beer and spirits, has a singular interest, and that is the consumption of coffee,[3] which is extremely large, amounting in 1898 to no less than 11 lbs. per head of the population; in 1893 the consumption of this article was 8 lbs. per head. This consumption of coffee will indeed appear large when we consider that the consumption in this country is less than three-quarters of a pound, whilst in France it is 3½ lbs., and in Germany 5 lbs.

To return, however, to alcoholic beverages, and coming nearer home to our own country. It is to be remarked how singularly small are the fluctuations in the amount of wine drunk in the United Kingdom. Taken over a series of years, from 1885 to 1898, the *per capita* consumption of wine has varied only between 0·36 and 0·41 of a gallon; those are the extreme limits of fluctuation. Neither can a consumption of less than 2 quarts per head of the population be regarded as large; and it should be remarked that out of the net revenue derived from the taxation of alcoholic beverages, wine contributes only 4 per cent., or one twenty-fifth part of the 34 millions sterling derived from that source.[4]

With regard to the spirits consumed in the United Kingdom, the most salient points brought out by the returns of recent years are, first, their consistent steadiness of consumption, if I may be allowed the expression—the *per capita* consumption in the United Kingdom over a series of years from 1891 to 1898 having scarcely varied from 1 gallon per head of the population, the limits of fluctuation in this case being 0·95 and 1·05; secondly, the increased proportion of home-made as opposed to foreign spirit drunk in this country (see statement II in Appendix). About 20 per cent. of the spirits consumed is imported from abroad, and about 80 per cent is manufactured here. The amount imported year by year, remains stationary, the amount manufactured at home shows a steady and progressive increase, though not out of proportion to the increase of the population. The consumption of wine and spirits in this country (having regard to the increase of the population) shows therefore no very great or remarkable change. But in the case of beer it is different. The consumption of that article of late years has, to use the consecrated expression, advanced by leaps and bounds. In 1885-86 the consumption was approximately 975 million gallons; in 1897-98 it was 1,282 million gallons; the *per capita* consumption rising in the same period from 27 gallons to over 31½ gallons. It is an enormous figure, especially when we take into account the comparatively small amount of beer consumed in Scotland and in Ireland. It is interesting, however, to remark that over the same period the consumption of beer in Germany rose from 19½ gallons per head to 27 gallons; the proportionate increase is much larger therefore in Germany than in this country (the actual rate of increase being in the United Kingdom 18 per cent., and in Germany 36 per cent.). The total amount of the beer consumed in Germany is 1,458 million gallons, or rather more than it is in this country, where the quantity consumed is, as stated above, 1,282 million gallons; but the difference of the population must be taken into account, Germany having a population of 14 millions more than the United Kingdom. Germany has been regarded by many as the beer-drinking country *par excellence.* This idea arises no doubt from the fact that in parts, such as Bavaria, the consumption of beer per inhabitant is no less than 56 gallons, whilst in Wurtemburg it is 43 gallons, and in Baden 36. These figures exceed our own of 31½ gallons per head. But then again it must be remembered that in some of the northern provinces of Germany on the Baltic little beer is drunk, the consumption of the inhabitants of those parts being spirits rather than beer.

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[3] See Appendix III.

[4] See Table I in Appendix.

There is also one other country besides Bavaria and Wurtemburg where beer is drunk in larger proportion than it is in the United Kingdom, and that is Belgium, where the consumption per head is 45 gallons.

Belgium is a small country, but the inhabitants are very well to do. Whether it is to be attributed to this circumstance or to any other, such as the smallness of the taxation, may be a matter of opinion, but anyhow Belgium holds the somewhat unenviable position of consuming, per head, a larger proportion of alcoholic liquor than any other country in the world, unless perhaps Denmark.

Belgium is not a wine-producing country any more than the United Kingdom, and yet the *per capita* consumption of wine is just twice as great as in England. As already stated, in Belgium 45 gallons of beer are consumed per inhabitant; in the United Kingdom not quite 32 gallons. As regards spirits, again, the consumption per head in Belgium, taking the last ten years, is rather over than under 2 gallons, or, again, twice as much as in England. I shall have occasion, however, to refer to this consumption of spirits further on.

So much, then, for the consumption of alcoholic beverages in this country as compared with foreign nations.

I now propose to review shortly the "proclivities," if I may use the expression, of the principal nations of the earth in this matter of drink, taking successively wine, beer, and spirits; and first of wine. There is one country which stands out pre-eminent in the consumption of wine, and that is France. In France very close upon 24 gallons of wine are drunk per head of the population. It is the largest consumption of wine in any country of the world, and not only do the French drink their own wine, but they are the largest importers of wine also, the imports of wine into France being in the year 1898, for instance, five times as large as the exports, and I may add the year 1898 is by no means singular. At an interval in the matter of consumption of wine come very close together Italy, Spain, and Portugal, in all of which (I am speaking roughly), approximately, 20 gallons of wine per head are consumed annually. Again, at an interval, comes Switzerland with 15 gallons; then at a long interval Austro-Hungary with 3 gallons, and the German Empire with under 2 gallons. All the rest of the nations for which reliable data exist consume under 1 gallon per head. That exhausts wine. Coming now to beer. In the matter of the consumption of beer Belgium stands first with, as already stated, 45 gallons per head; next, at a considerable interval, comes the United Kingdom with just under 32 gallons; Germany, which comes third, at not so long an interval, consumes 27 gallons; then Denmark with 20 gallons; and then Switzerland, where the consumption of beer is steadily increasing, with 15 gallons. The United States, Sweden, and Austro-Hungary come close together with 13, 10, and 9 gallons respectively. France consumes 5 gallons, and Norway much the same amount. Other nations scarcely touch beer, except perhaps Holland. But as regards Holland no official statistics as to beer exist.

The third division is spirits. And here it is much easier to generalise, for, curiously enough, as an examination of the official statistics will show, one-half of the civilised nations of the world drink approximately—I am speaking approximately—2 gallons of spirits per head of the population, and the other half drink approximately 1 gallon per head.

Denmark stands in the matter of the consumption of spirits in a class by itself, with over 3 gallons per head. Then close together come France, Germany, Austria, Holland, Belgium, and Sweden. In all these countries close on 2 gallons of spirits are consumed per head; the consumption in each for many years back neither increasing nor decreasing, but for the most part with small fluctuations, remaining stationary, having regard always to the increase of the population. We now come to the countries which consume 1 gallon of spirits per head: these are the United Kingdom, the Russian Empire, the United States, and Switzerland. In these countries, too, the figure of 1 gallon a head (or approximately so) is a pretty constant one, although it should be remarked that of late during the last four years, the consumption of spirits in the United States has been persistently below 1 gallon, and in the preceding four years persistently above it.

It may be remarked that the population of the six countries where approximately 2 gallons of spirits per head is consumed is 146 millions, and that the population of the four countries where approximately only 1 gallon per head is consumed is 248 millions. It would seem therefore that in the, so to speak, spirit-drinking countries there is a decided preponderance of the inhabitants who prefer 1 gallon to 2. The foregoing remarks refer to the drink of the leading and most civilised nations of the world.

I now come to the last, and possibly the most interesting, subdivision of my subject—namely, the consumption of alcoholic beverages in the principal British Colonies—that is in Australasia, Canada, and the Cape. I have kept the statistics of these countries apart from those of the various nations of Europe for several reasons, the principal being that these newer nations stand by themselves as a class apart, being younger, poorer, from want of the accumulated wealth of ages, and from the want of established industries connected with the wine, beer, and spirit trades, these being the creation almost entirely of the last fifty years, except in the case of the wine industry at the Cape, which was established as far back as 1653. The only country with which our colonies can perhaps fairly be compared is the United States of America, and the United States themselves were far advanced in civilisation, and accumulated wealth when our great colonies were still asleep and in their poverty. Probably the industries to which I refer will grow; whether it is desirable they shall grow is another question, but probably with the growth of the countries they will grow too: I refer more particularly to the beer industry, which seems to spread with the spread of the Saxon and Anglo-Saxon races, though up to the present time the consumption of this article in the colonies is but small as compared with the huge consumption of beer in the mother country; particularly is this the case as regards the Cape Colony, and also the Dominion of Canada, the inhabitants of which latter may be described as drinking less of the various kinds of alcoholic beverages than the inhabitants of any country in the world which has any reliable statistics; less even than the Norwegians, whose official returns show them to be the most abstemious people of Europe—who have statistics, that is.

I will now take the statistics of our three great colonial possessions *seriatim*, and first Australasia. The statistics of drink in the various colonies of Australia are at the present day fairly complete. They show that these colonies, having a population of rather more than 4½ million people, consume approximately 1 gallon of wine per head, 10 gallons of beer, and three-quarters of a gallon of spirit, the wine consumed being in excess of that consumed in this country, where under half a gallon per head is drunk, but the beer and spirits are distinctly less per head than what is consumed here; in the case of beer very distinctly less. The wine and the beer consumed in Australasia are made in the colonies; of the spirit consumed 80 per cent. is imported, mostly from the United Kingdom. It may also be remarked that of the 3 million sterling, approximately the revenue which the Australasian colonies derive from the taxation of drink, 2 millions are derived from the taxation of the imported beverage, and that of these 2 millions, 90 per cent., approximately, is derived from the taxation of the spirit imported. This importation of spirits into the Australian colonies is vastly in excess of the local production. I know of no other civilised country in which the import exceeds the production. Even in our own country, in which quite an unusually large amount of foreign spirit is consumed, 80 per cent. of what is drunk is made at home, and only 20 per cent. comes from abroad, and yet, as I have remarked, even this 20 per cent. is a large proportion, far larger than in most countries. The proportion of spirit therefore imported into Australasia is phenomenal.

To come now to the Cape Colony, and here it is to be observed that while the statistical data relating to the Australasian colonies may be stated to be fairly complete and reliable, those relating to the Cape Colony are distinctly the reverse. This applies more particularly to the classes of alcoholic beverages which are chiefly consumed there, viz., wine and spirits. These are so inextricably "mixed" that it is impossible to arrive at any very definite results with regard to either. This arises chiefly from the fact that much of the wine made is boiled and turned into brandy.

The Comptroller of Licenses before the Liquor Laws Commission of the Cape of Good Hope in 1890, stated that two-fifths of the wine made "is believed" to be distilled into brandy. At the present day there appears to be just as much uncertainty as there was in 1890 as to what quantity is, each year, transmuted into brandy; probably the amount of brandy made from wine varies considerably with the wine harvest from year to year, and without the necessary data it is impossible to arrive at any satisfactory figure as to the amount of wine which actually goes into consumption *as wine* at the Cape. From 4 to 6 million gallons of wine are produced annually, not a very large production and about equal to that of Australasia, or perhaps some of the small States of Germany, such as Baden or Bavaria.

The export of wine to Europe from the Cape is small and decreasing, it amounts at present to under 70,000 gallons, most of the wine exported going inland to the Transvaal and other parts adjacent.

The consumption of beer at the Cape is small and steady, and has not reached 2 gallons per head of the population in any one year. The Cape is, in fact, a smaller consumer of beer than any of the large colonies. It may be mentioned in this connection, however, that the consumption of beer in the adjoining little colony of Natal is even smaller, and does not amount to even half a gallon per head. At the Cape 75 per cent. of the beer consumed is produced in the colony; the official statistics of Natal show that in that colony no beer is produced locally. Spirits are consumed in the Cape Colony in about the same proportion as in England, viz., approximately 1 gallon per head of the population. Unfortunately no statistics exist to show what proportion of this spirit is made from wine and is genuine brandy —the term brandy being derived from the German *brant-vin*, or burnt wine—and what part is Cape-smoke or trade spirit, commonly called *alcool d'industrie,* the industry at the Cape having the reputation of producing a remarkably deleterious compound. It is to be hoped that after the present war is over the statistics of the Cape Colony relating to alcoholic beverages may be improved.

We now come to Canada, the oldest of our big colonial possessions. The consumption of drink in Canada is singularly small, smaller than in any country of the world for which statistics exist, and, what is even more remarkable, is steadily decreasing, more particularly as regards the consumption of spirits; indeed, it is interesting, as I have before observed, to trace the comparative decrease which has taken place in the consumption of spirits of recent years in Canada and in the United States. I have referred, I know, to this before, but I think I should amplify what I have already said. Thus, in the States, the consumption of spirits per head in 1890 was 1·17 gallon; in 1898 it had fallen to 0·92 of a gallon. In Canada the consumption was in 1890 0·95 of a gallon, in 1897 it was 0·75 of a gallon, in 1898 it was 0·55; the falling off in the consumption of spirits in Canada is therefore even more marked than in the United States. I have referred already to the increased consumption of coffee in the United States of recent years; the same increase of consumption is observable in Canada, only of course on a much smaller scale. In 1890 the consumption of coffee per head in the United States was 8 lbs. per head; in 1898 it was 11 lbs. per head. In Canada the consumption was 0·64 of a lb. in 1890, and 0·97 of a lb. in 1898.[5] The consumption of coffee therefore in both appears to be increasing, just as the consumption of spirit is decreasing. With regard to wine, the statistics of the Dominion of Canada show that not a tenth part of a gallon is consumed per head. The consumption of wine, then, in Canada may be regarded as almost non-existent. Neither is the consumption of beer in the Dominion large, amounting to approximately 3½ gallons per head. This compares with a consumption in the United States of 13 gallons per head. The consumption of the article in Canada remains steady, it may be remarked, neither increasing nor decreasing. Almost the whole amount consumed is produced in the colony, only about 3 per cent. being imported. Of the consumption of spirits in the Dominion I have already spoken. During the last three years it has averaged 0·65 of a gallon, the latest year of the triennial period—1898, being the lowest, namely, 0·55 of a gallon.

The drink of the people in the Dominion of Canada may therefore be said to be spirits, the amount of beer consumed being so small, and wine almost non-existent; but even of spirits, which is the alcoholic beverage most affected, the inhabitants of the Dominion drink little, less indeed than the inhabitants of almost any civilised country in the world.

Such are the statistical results relating to the consumption of alcoholic beverages in the Colonies. They are interesting, especially when the results for each Colony are placed side by side. To those persons who do not themselves drink, but who take an interest in what others consume, they must be eminently satisfactory.

In conclusion. Into the question of the "desirability" of drinks I have not entered; it is a question on which many feel strongly, some one way, some the other, and it forms no part of my subject. My object has been to-day to deal in a succinct form, and as shortly as possible without omitting leading features, with the question of what *is* drunk in the civilised countries of the world, rather than with the question of the "desirability" that it should be drunk—or otherwise.

One conclusion I may perhaps be permitted to draw. Wine and beer may be, probably are, in the generality of countries for the most part pure and innocuous; but with regard to spirits, there is the rub. The fiscal authorities in many countries draw large, and increasingly large, proportions of their revenue from the taxation of spirits, an article which is very generally taxed from 200 to 300 per cent. of its value, not its original value, but its value when going out of bond and into consumption.

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[5] See Table III in Appendix.

Now with increased taxation there is more and more temptation to dealers, I will not say to the vilification, but to the falsification, of the article, and the State in so many instances deriving such a large revenue from the article, does it not become more and more incumbent on the State to protect in some measure the consumer? This is being recognised in some countries. In Russia, for instance, the Government has established a monopoly which, it is claimed, will at the same time diminish consumption, ensure a purer article being supplied, and at the same time increase the imperial revenue. In France a monopoly of rectification is proposed, and is under the consideration of the Government, and this, it is claimed, will answer the same purposes.

Here, in the United Kingdom, the spirit of the country is opposed to monopolies, particularly Government monopolies. But there are in this country inspectors whose duty it is to see that various articles of consumption, such as milk for instance, are served pure and unadulterated, and I feel sure that no statesman who carries into effect a measure calculated to provide to his fellow creatures some more efficient protection than at present is the case in the matter of the distilled beverages served to them, will have lived entirely in vain.

APPENDIX.

Table I.—UNITED KINGDOM. Customs and Excise Revenue. Receipts from Taxation on Drink.

Net Customs and Excise Receipts from the Taxation of Spirits, Wine, and Beer in the United Kingdom; Net Revenue, together with the Percentage Proportion of such Receipts; also the Percentage Proportion received from Wine to the Total Customs and Excise Receipts from the Taxation on Drink.

Years ended 31st March.	Net Receipts from Customs.			Net Receipts from Excise.			Total Net Receipts from Customs and Excise on Alcoholic Beverages.	Percentage to Total Customs and Excise Receipts from Alcoholic Beverages.		Percentage Proportion received from Wine to Total Customs and Excise Receipts.
	From Spirits.	From Wine.	Total.	From Spirits.	From Beer.	Total.		From Customs.	From Excise.	
	£	£	£	£	£	£	£	Per cnt.	Per cnt.	Per cnt.
1885	4,313,039	1,233,998	5,547,037	13,987,472	8,544,749	22,532,221	28,079,258	19·8	80·2	4·4
'86	4,153,873	1,194,655	5,348,528	13,140,695	8,403,581	21,544,276	26,892,804	19·9	80·1	4·4
'87	4,219,271	1,128,073	5,347,344	12,852,767	8,495,654	21,348,421	26,695,765	20·0	80·0	4·2
'88	4,224,347	1,085,046	5,309,393	13,088,203	8,711,533	21,799,736	27,109,129	19·6	80·4	4·0
'89	4,296,634	1,210,537	5,507,171	12,879,153	8,770,295	21,649,448	27,156,619	20·3	79·7	4·5
'90	4,681,225	1,302,160	5,983,385	13,860,002	9,410,426	23,270,428	29,253,813	20·5	79·5	4·5
'91	4,492,811	1,318,006	5,810,817	14,770,730	9,390,141	24,160,871	29,971,688	19·4	80·6	4·4
'92	4,427,904	1,291,052	5,718,956	15,693,631	9,457,749	25,151,380	30,870,336	18·5	81·5	4·2
'93	4,091,524	1,268,491	5,360,015	15,284,067	9,445,893	24,729,960	30,089,975	17·8	82·2	4·2
'94	4,130,685	1,210,142	5,340,827	15,189,345	9,536,948	24,726,293	30,067,120	17·8	82·2	4·2
'95	4,197,260	1,143,698	5,340,958	15,269,296	10,102,050	25,371,346	30,712,304	17·4	82·6	3·7
'96 ...	4,216,921	1,254,994	5,471,915	15,603,680	10,718,719	26,322,399	31,794,314	17·2	82·8	3·9
'97	4,318,192	1,296,181	5,614,373	16,013,412	10,901,094	26,914,506	32,528,879	17·3	82·7	4·0
'98	4,299,961	1,325,372	5,625,333	16,396,726	11,388,126	27,784,852	33,410,185	16·8	83·2	4·0
'99	4,236,160	1,399,100	5,635,260	17,109,273	11,638,201	28,747,474	34,382,734	16·4	83·6	4·1

Note.—The above figures for 1891-99 are exclusive of additional spirits and beer duties collected for local authorities.

Table II.—UNITED KINGDOM.

Consumption of Spirits.

Statement showing the Consumption of Spirits in the United Kingdom, distinguishing the Quantity of British and of Foreign Spirits Consumed, together with the Quantity Consumed per Head of the Population respectively.

Years.	Total Quantity of Spirits Consumed. [000's omitted.]			Consumption per Head of the Population.		
	British.	Foreign.	Total.	British.	Foreign.	Total.
	Gals.	Gals.	Gals.	Gals.	Gals.	Gals.
1885....	26,609,	7,906,	34,515,	0·74	0·22	0·96
'86....	25,954,	8,171,	34,125,	0·71	0·23	0·94
'87....	25,970,	7,604,	33,574,	0·71	0·21	0·92
'88....	25,964,	8,174,	34,138,	0·70	0·22	0·92
'89....	25,836,	8,243,	34,079,	0·70	0·22	0·92
1890....	27,828,	8,978,	36,806,	0·75	0·24	0·99
'91....	29,829,	8,603,	38,432,	0·79	0·23	1·02
'92....	31,469,	8,498,	39,967,	0 83	0·22	1·05
'93....	30,661,	7,841,	38,502,	0·80	0·21	1·01
'94....	30,452,	7,916,	38,368,	0·79	0·21	1·00
'95....	29,291,	7,707,	36,998,	0·75	0·20	0·95
'96....	31,089,	8,037,	39,126,	0·79	0·21	1·00
'97....	32,126,	8,288,	40,114,	0·81	0·21	1·02
'98....	32,898,	8,251,	41,149,	0·82	0·21	1·03
'99....	34,334,	8,128,	42,462,	0·85	0·20	1·05

Note.—The particulars for the years 1885-88 inclusive relate to the calendar years ended 31st December, whilst those for 1889 and subsequent years are for the financial years ended 31st March.

Table III.—*Statement showing the Quantity of Raw Coffee Imported into the United States and Canada, with the Quantity Consumed per Head of the Population, in each Year from* 1870 *to* 1899 *inclusive.*

[000's omitted in quantity columns.]

Years ended 30th June.	United States.		Canada.	
	Quantity of Coffee Imported.	Consumption per Head of the Population.	Quantity of Coffee Imported.	Consumption per Head of the Population.
	lbs.	lbs.	lbs.	lbs.
1870	235,257,	6·00	Not stated in	abstract
'71	317,992,	7·91		
'72	298,806,	7·28		
'73	293,294,	6·87		
'74	284,272,	6·59		
'75	321,971,	7·08		
'76	340,089,	7·33		
'77	331,639,	6·94		
'78	309,882,	6·24		
'79	377,848,	7·42		
1880	446,851,	8·78		
'81	455,190,	8·25		
'82	459,923,	8·30	2,758,	—
'83	515,879,	8·91	2,498,	—
'84	534,786,	9·26	2,227,	—
'85	572,600,	9·60	4,108,	—
'86	564,708,	9·36	3,845,	—
'87	526,109,	8·53	1,826,	—
'88	423,646,	6·81	2,767,	0·59
'89	578,397,	9·16	3,037,	0·64
1890	499,159,	7·83	3,074,	0·64
'91	519,528,	7·99	3,228,	0·67
'92	632,942,	9·61	3,212,	0·66
'93	541,157,	8·24	3,471,	0·70
'94	531,705,	8·01	3,115,	0·62
'95	645.706,	9·22	3,257,	0·64
'96	580,598,	8·04	3,321,	0·65
'97	737,646,	9·95	4,505,	0·87
'98	870,514,	11·45	4,721,	0·90
'99	831,820,	11·00	5,159,	0·97

Table IV.—FRANCE.

Production of Wine and Cider.

Statement showing the Production of Wine and of Cider in France, and the Quantity of Spirits produced therefrom, in each Year from 1876 *to* 1898 *inclusive.*

[Extracted from the "Bulletin de Statistique et de Législation Comparée," August, 1899.]

Years.	Production [000's omitted]		Production of Spirits	
	Of Wine.	Of Cider.	From Wine.	From Cider.
	Hectol.	Hectol.	Hectol. (pure alcohol.)	Hectol. (pure alcohol.)
1876	41,847,	7,036,	545,994	22,388
'77	56,405,	13,345,	157,570	9,468
'78	48,720,	11,936,	192,952	9,822
'79	25,770,	7,738,	102,651	7,265
1880	29,677,	5,465,	27,200	3,317
'81	34,139,	17,122,	34,324	2,291
'82	30,886,	8,921,	21,962	9,829
'83	36,029,	23,492,	22,710	8,088
'84	34,781,	11,907,	35,251	15,567
'85	28,536,	19,955,	23,240	20,908
'86	25,063,	8,300,	19,513	28,600
'87	24,333,	13,437,	32,758	13,595
'88	30,102,	9,767,	41,776	12,933
'89	23,224,	3,711,	42,140	15,298
1890	27,416,	11,095,	38,799	4,803
'91	30,139,	9,280,	51,133	7,759
'92	29,082,	15,141,	69,639	13,589
'93	50,070,	31,609,	100,829	44,761
'94	39,053,	15,541,	161,660	72,135
'95	26,688,	25,587,	61,202	45,717
'96	44,656,	8,074,	58,652	53,759
'97	32,351,	6,789,	83,719	26,579
'98	32,282,	10,637,	45,975	9,352

Note.—The hectolitre is equal to 22 imperial gallons.

TABLE V.—FRANCE.

SPIRITS PRODUCTION.

Statement showing the Quantity of Spirits produced in France, distinguishing the various Substances from which Produced, in each Year from 1876 *to* 1898 *inclusive, with the Percentage Proportion Distilled from Wine to the Total Production.*

Years.	Quantities of Spirits Distilled.								Total.	Percentage Proportion from Wine to Total Production.
	From Wines.	From Cider.	From Fruits.	From Waste Products, Lees, &c.	From Farinaceous Substances.	From Molasses.	From Beetroot.	From other Substances.		
	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Hectol.	Per cnt.
1876	545,994	22,388	1,228	76,227	101,402	710,670	243,337	7,929	1,709,175	31·9
'77	157,570	9,468	1,062	56,191	163,204	642,709	272,883	5,796	1,308,881	12·0
'78	192,952	9,822	978	51,079	180,469	646,715	331,716	3,496	1,417,227	13·6
'79	102,651	7,265	438	36,831	247,171	723,631	364,714	5,118	1,487,879	6·9
1880	27,200	3,317	624	17,373	412,585	685,433	429,878	4,658	1,581,068	1·7
'81	34,324	2,291	603	24,621	506,273	685,646	563,240	4,289	1,821,287	1·9
'82	21,962	9,829	713	22,893	447,066	703,989	556,056	4,058	1,766,566	1·2
'83	22,710	8,088	1,408	28,918	561,932	750,637	629,998	7,325	2,011,016	1·1
'84	35,251	15,567	2,799	43,266	485,001	778,714	569,257	4,609	1,934,464	1·8
'85	23,240	20,908	7,680	43,853	567,768	728,523	465,451	7,028	1,864,514	1·2
'86	19,513	28,600	4,424	49,311	789,963	471,781	683,985	4,673	2,052,250	1·0
'87	32,758	13,595	2,386	41,872	765,050	451,826	672,352	25,796	2,005,635	1·6
'88	41,776	12,933	4,016	44,092	794,326	582,452	654,700	28,188	2,162,483	1·9
'89	42,140	15,298	2,820	43,881	751,266	559,911	824,090	6,557	2,245,963	1·9
1890	38,799	4,803	1,160	34,374	645,255	682,573	800,982	6,581	2,214,527	1·8
'91	51,133	7,759	5,878	37,748	392,537	838,645	866,406	8,013	2,308,119	2·2
'92	69,639	13,589	4,348	46,210	366,335	902,446	854,329	6,183	2,263,079	3·1
'93	100,829	44,761	28,222	74,773	457,877	896,572	861,099	12,254	2,476,387	4·5·
'94	161,660	72,135	29,011	77,274	415,795	817,525	753,508	2,205	2,329,113	6·9
'95	61,202	45,717	14,698	62,592	386,604	846,403	744,325	5,907	2,165,448	2·8
'96	58,652	53,759	6,051	78,429	416,530	863,423	544,087	1,203	2,022,134	2·9
'97	83,719	26,579	6,311	72,909	484,637	734,819	798,484	682	2,208,140	3·8
'98	45,975	9,352	4,781	55,207	683,566	708,270	897,542	7,767	2,412,460	1·9

DISCUSSION *on* MR. BENCE-JONES'S PAPER.

THE CHAIRMAN (Mr. A. E. BATEMAN, C.M.G.), in opening the discussion, observed that Mr. Bence-Jones had special qualifications for writing this paper, as a great part of the Board of Trade returns of alcoholic beverages of the world which had been prepared for the last three years was carried out under his supervision; and the construction of the tables was also mainly Mr. Bence-Jones's work, though in the ordinary official course his name did not appear in the publication. He was glad to see that Mr. Bence-Jones had abstained from adding the assumed amount of alcohol in beer, wine, and spirits together, and thus making totals of the actual alcohol supposed to be consumed in the various beverages: *e.g.*, definitely stating that France consumed so much spirit, Great Britain so much, or Canada so much. It was well known that the behaviour of alcohol differed according to the drink in which it was taken. The effect of alcohol in beer, for instance, was quite different from that of alcohol in gin, and, therefore, to give such a figure would be in many points of view misleading, in addition to the difficulty of estimating the proportion of spirit in all kinds of beverages. Mr. Bence-Jones's father had written on the subject fifty years ago, and had compared proof spirit with absolute alcohol, both as to weight and as to measure; and in the article which dealt with the subject in *Ure's Chemical Dictionary*, there was a table in which quite as much importance was attached to weight for the purpose of comparison as to measure. But a Russian statistician connected with the Finance Ministry had just published in a new journal an attack upon the statistics of the Board of Trade. This writer asserted that the Board of Trade had published forty pages of absolutely inaccurate figures, because they had converted absolute alcohol into proof spirit by weight instead of by measure, whereby a difference of several degrees per cent. was shown. He would, therefore, like this matter of the importance of weight to be put on record by the Society, as the imputation in question was too grave to be allowed to pass without refutation. He did not agree in Mr. Bence-Jones's explanation that the fact that Belgium drank more, and Canada and the colonies generally less, than the inhabitants of our own country, was in consequence of the comparative degree of wealth which the mass of their people enjoyed. For, taking the wages statistics, he should say that the standard of living was considerably higher in the Australian and Canadian colonies than in Belgium. In Belgium the people ate very little sugar and not much meat, and he invited explanation as to the cause of the small consumption of alcohol in Canada. Several suggested explanations might be afforded. There was, for instance, the Scott Act, which was passed about twenty years ago, to authorise local option, but the Canadians did not seem to appreciate it, they wanted freedom. Yet, having freedom to drink, they did not drink. In such a state of things there was something curious. He would like to allude to one other point as to which there were no figures in this paper, viz., the methylation of spirits. The parliamentary return showed what was called by the curious name of "de-natured spirits," by which was meant spirit unfit for drink, but fit for use in the arts, and as a means of lighting and of power. This method of utilising spirit was, he thought, a very important point, and one which he hoped would be taken up by people who objected to spirits for drinking purposes. In Greece, when the currant crop was excessive, about 30 per cent. was distilled into spirit. This stuff was thrown on to the market for human consumption, whereas it could be better employed if there were good systems for utilising it in lighting and locomotion. He was glad to see by last week's papers that the French Government had offered a prize of 1,000 frs. for the best system of applying alcohol to motor cars.

Professor F. Y. Edgeworth said that in listening to Mr. Bence-Jones's most instructive and entertaining address, he had been particularly impressed by the connection which had been traced between increase of consumption of alcohol and increase in national prosperity. Economists were interested in a parallel question, viz., the relation between the price as increased by taxation and the consumption irrespective of changes in prosperity. Mr. Bence-Jones's observations would point to the conclusion that the demand for drink was apt to vary with the price. For if the demand were inelastic, an increase in prosperity would not have much increased consumption. However, it had been pointed out in the report on alcoholic beverages which Mr. Bateman had prepared in 1897, that in Belgium and in the municipality of Marseilles a great increase of duties on alcoholic beverages had not been attended with a decrease in consumption. Supposing that the object of the Chancellor of the Exchequer was only to get as much as he could from the taxes, it could be proved that he must not put up his taxation to a point where it caused a reduction in consumption. It thus appeared that the two objects, which, according to many economists, the taxation of alcoholic beverages should aim at, the increase of revenue and the decrease of intemperance, did not lie wholly apart.

Mr. Stephen Bourne, after expressing his agreement in the cordial feeling of thankfulness to Mr. Bence-Jones for the information with which he had supplied them, said he would first refer to the point raised by the Chairman as to the absence of any computation of the amount of alcohol contained in the various liquors. What they wanted to know was how large was the quantity of proof spirit actually taken into consumption in the various countries. In regard to what Mr. Bence-Jones had said of the singular constancy of the consumption of wine, it was to be remembered that wine was very seldom drunk the moment the duty was paid and it came out of bond. Deliveries of wine and payment of duty were generally large when the crops were good. It then went into the cellars to mature, and the consumption was thus spread over a series of years. That would tend to equalise the matter and to account for there not being much variation. Again, in England, wine was consumed by only a limited portion of the population—those who had larger means and refined tastes. But the conditions were, of course, different in countries like France and Spain, and perhaps at the Cape, where wine was produced and drunk in a very immature condition and of very inferior quality. He attributed the variation in the quantity of liquor consumed in various places not to the difference in wealth or to the amount of population, but to the variations in the density of the population. He believed that statistics, if procurable, would show that the consumption of liquor of whatever kind was far greater in large cities than in the more sparsely peopled districts. As to the reason why Canada drank so little liquor, it was no doubt partly due to the operation of the Scott Act, which did for a time operate to limit consumption, and got the people in distant places where liquor was difficult to obtain into the habit of doing without it. If one looked to the public-houses here, one would see that the greater portion of the liquor there drunk was for the sake of good fellowship. The same people if scattered about in isolated places would not drink anything like the same amount. Capital, again, had a great deal to do with production. He cited Belgium—one of the most densely populated countries, and one which exceeded England in the proportion of alcohol consumed—as an example of the effect which facilities for transport and supply had in increasing consumption of alcohol. England could produce good and cheap beer, because of the capital which the industry attracted and the large demand which its dense population gave. But places like Australia and the Cape were not likely to be great producers of beer, because of the limited machinery at command and the small population to be supplied. There was no doubt that in England seasons when wages were high and work plentiful did produce an increased consumption of intoxicating liquor. Going back to the question of indicating the quantity of alcohol in particular liquors, he remarked that the quantity of alcohol consumed in beer was much more lightly taxed than the alcohol consumed in spirits. If he reduced the alcohol in spirits to the strength of the alcohol in beer, the consumer would find that he was paying five or six times as much to the revenue for his drink as the beer drinker paid. It seemed to him that the Chancellor of the Exchequer might very much increase the revenue by taxing beer to a very much higher extent. Spirits could not be taxed very much higher, because there was a limit to taxation by reason of the facility afforded for illicit production; but it was not so with beer. With regard to the large consumption of coffee in Canada, he suggested that that might be due to the fact that so many Canadians were of French extraction, and perhaps inherited the French facility for making good coffee.

Mr. T. J. PITTAR, C.B., said he thought it undesirable that such a figure as the absolute amount of alcohol actually consumed in the different drinks of the various countries, should appear in such a parliamentary return as that on which Mr. Bence-Jones had founded his paper. But there was no reason why members of that Society should not know the facts. Taking the parliamentary paper, he found that the amount of spirits consumed per head of the population in the United Kingdom was 1·03 gallons, but that was in actual spirit, whisky, brandy, or rum. In beer each individual of our people consumed over 3 gallons of proof spirit, and in wine about one-tenth of a gallon. We got, therefore, the figure of 4·3, or in round numbers 4¼ gallons of proof spirit consumed by each inhabitant of the United Kingdom. As against that, we had in France the astounding figure of 7 gallons as the total. That arose mainly from the large consumption of wine in France. In arriving at that figure he had taken the wine of France at the average strength of the French wine imported into this country, assuming that the wine classified in the French returns might be of that strength. He thought that assumption was not too high, because though the wine made in France which did not figure in the Government returns might undoubtedly be taken as being weaker, he argued they might fairly assume that the wine included in the Government returns on which the Board of Trade paper was founded was of the same strength as the French wine drunk in this country. The alcoholic strength of that wine was returned at 18·01 degrees, thus giving 4·43 gallons of proof spirit as the alcoholic equivalent of the 24·64 gallons of wine consumed *per capita*. In his beer the average Frenchman only consumed half-a-gallon of proof spirit, and then they had the rather large amount of 2 gallons (2·07) of actual spirit consumed, which gave to the Frenchman a total of 7 gallons against the Englishman's 4¼ gallons. The result of the figures for the four countries given being, that the most temperate country was the United States, which consumed 2·2 gallons of proof spirit in all liquids, Germany coming next with 2·42 gallons, the United Kingdom next with 4¼ gallons, France being far and away ahead with 7 gallons. The figures he had given were the official figures, reduced to the alcoholic equivalents officially recognised. For instance, as regarded beer, he had taken the equivalent given by the laboratory at Somerset House. As regarded wine the English alcoholic equivalent was difficult to obtain, because in England a quantity of strong wine like port and sherry was drunk. In England, therefore, the average alcoholic equivalent of wine consumed was 26·73 degrees of proof spirit per gallon, while in the case of French wine the equivalent was almost exactly 18 degrees. He did not know why 18 degrees should be considered too strong for French wine. Though some French wines had considerably less than 18 degrees of alcohol, others had considerably more, for instance, the whole of the champagnes, Rousillon, and the wines of the southern departments calculated at 26·73. The amounts which he had quoted of proof spirit were the alcoholic equivalents of the quantities given in the Board of Trade returns on the consumption of alcoholic beverages. There were, however, two facts within the knowledge of the author which threw very considerable difficulty in the way of arriving at the true figures of the alcohol consumed. The first was the difference in the alcoholic scales which had been allowed for in the returns, and the second was the diverse fiscal arrangements in the various countries. He instanced the permission extended to farmers in England to brew beer and cider, and in France *piquette*, of which an enormous quantity was drunk, and of which no statistics existed. Each of these beverages contained a certain amount of alcohol. They, however, had only the figures that were actually returned in the Government statistics of the several countries, and he thought it well in considering a paper of this kind to reduce it to the common denomination of proof spirit, so that they might know the amount of proof spirit consumed by the inhabitant of each country.

Major P. G. Craigie said, that as Mr. Bence-Jones had alluded to the possibility of extending the information which he had so pleasantly put before the Society, so as to show the cider produced or consumed in this country, he should like to point out that it would only be possible to obtain like statistical information on this point by the like fiscal methods which led us to know about other beverages. If cider was taxed, the statistics desired would be forthcoming. In France he believed they estimated not only the amount of cider production, but even the number of trees bearing the cider apple. Their agricultural inquiries were hardly so minute as that here. He agreed with the Chairman, and differed from Mr. Bence-Jones as to the comparative wealth of Belgium and poverty of Australia. He did not think Belgium had the wealth Mr. Bence-Jones attributed to it, and he saw nothing in its social condition to explain on this account its high consumption of alcohol. He asked, might not the Belgian statistics possibly be inaccurate, and, owing to her geographical position, that country have been credited with the consumption of some alcoholic beverages which were, in fact, ultimately re-exported? With regard to the suggestion of Mr. Bourne as to drinking depending on density of population, he would much like to see, if it were possible, the consumption of the different parts of countries, rural and urban, shown separately. This would be particularly interesting in the case of Canada and the United States, where, owing to the apparent similarity of the social conditions prevailing on the two sides of the border, it seemed hard to understand why the consumption, not only of alcohol, but also of coffee, should differ so radically. Mr. Bence-Jones had brought out, not only that coffee was the national drink of the States, but also that its consumption was increasing with extreme rapidity. It was sufficiently remarkable that in 1890, according to the paper, the consumption approached 8 pounds per head, and in 1896 it was a little over that total; whereas, between 1896 and 1898, there was a rapid rise to 11 pounds per head, whereas Canada took less than 1 pound, and we ourselves only three-quarters of a pound per annum. With reference to the purity of the different liquors mentioned, Mr. Bence-Jones suggested that only spirits lent themselves to any material adulteration, but he should imagine, from the discussion we had heard in Parliament and in the country lately, that in beer, too, there was very considerable room for some form of sophistication. The recent Treasury inquiry regarding the composition of beer had shown that within recent years its actual elements had varied, though, perhaps, nothing very deleterious had been shown to be introduced into the former product of malt and hops. As regarded the suggested closer inspection of spirits, he would point out that there were no special officers for detecting milk adulteration distinct from that of other commodities, and that in some counties he imagined the attention given to adulterated spirits was fully equal to that bestowed upon milk.

Mr. CÆSAR CZARNIKOW explained that the increased consumption of coffee in the United States in 1898 was due to the record production in the Brazils during 1897-98, and the consequent reduced value. The value of coffee had never been so low as it was in 1898. The total Brazilian production for 1897-98 amounted to 10,580,000 bags, against 8,371,000 bags in 1896-97, and 5,455,200 bags in 1895-96, and values steadily declined from 10·20 cents per pound in 1896 until they reached 5·45 cents in 1898.

Mr. JOHN GLOVER, speaking from an economical point of view, thought that the destruction of so much wealth by the use of alcohol as was represented by these enormous figures was a matter they should have heard something about in a paper before the Statistical Society, or from some of the economists who had spoken. Personally he had turned to this paper with some expectation, and he confessed he was disappointed. He hoped that the learned author would make some attempt to complete it. The paper was a most interesting Board of Trade return, and so it was naturally confined to a very dry statement of facts. But the *Journal* of the Society was a well-known vehicle for the discussion of the facts, and therefore what might be improper to put into a Board of Trade return, might be most useful in a statistical paper; and he would suggest to Mr. Bence-Jones that he should add to the paper the best estimate he could form of the alcoholic equivalent of the consumption in the different countries of which the paper treated. By doing this he would, he thought, add tenfold to the value of the paper. He thought the author would further increase its value by giving some hint from the best statistics obtainable of the result of the consumption of alcohol upon sobriety and criminality in the population in the various countries.

Mr. F. W. LAWRENCE suggested that, in regarding the question of how far increased national prosperity affected the consumption of alcohol, it was necessary to see how increased income would affect in this respect the individuals composing the different classes. First, he thought the wine-drinking classes, with increased means, would be likely to improve the quality, rather than to increase the quantity, of their wine. Then he thought the artisans and higher class labourers would not be likely to much increase their consumption. He fancied that the lower class of labourers and those having but casual employment would be found to be those whom increased means especially induced to increase their consumption of drink. He thought that if statistics on class consumption could be procured, they might afford some explanation of the small consumption of alcohol in Australia, Canada, and the Cape. These colonies had nothing like the same proportion of casual and low class labourers as the older countries —that is, of those classes which in his opinion consumed the great bulk of the alcohol, though at a low price; and the lesser consumption of these colonies as a whole might be due to some extent to this fact.

Mr. A. H. BAILEY agreed with Mr. Glover that the value of the paper would be very much enhanced by the addition of the alcoholic equivalents. Mr. Bence-Jones had made a gallon of beer and a gallon of spirits the same thing, which was very misleading, especially in view of what they had heard of the intemperance of France. Mr. Pittar had made out that France was the most intemperate country of Europe, forgetting that the Bordeaux and Burgundy drunk by the majority of the people there contained a different proportion of alcohol from the port, sherry, and champagnes consumed here. Without an alcoholic equivalent, therefore, the results were not to be depended upon. With reference to what had been said about coffee, it must not be forgotten that there was alcohol both in coffee and in tea, though, of course, it was a very small proportion.

Mr. P. C. MORGAN regarded as of some importance the criticism, referred to by the Chairman, as made by a Russian journal, and asked the reader of the paper why the basis of alcohol was taken by weight and not by volume? He understood that, at any rate in France and Germany, 50 per cent. alcohol meant 50 per cent. by volume, whereas "proof" spirit was 57 per cent. The desirability of showing the amount of alcohol consumed by various countries was proved by the fact that in a debate in the House of Commons on 27th March last, Sir William Harcourt, with this Board of Trade return in his hand, quoted figures for certain countries, and pointed out "how hollow the United Kingdom beat them all," and even went so far as to say that "under every head of alcohol England beat all the world." If Mr. Pittar's estimate was anything like right, it would appear that Sir William Harcourt was utterly wrong, as France consumed seven gallons of alcohol per head per annum, as compared with the United Kingdom's four gallons.

Mr. H. BENCE-JONES in reply referred to the suggestion of Professor Edgeworth, that the position of the Chancellor of the Exchequer was that he wished to raise the greatest possible amount of taxation each year, and therefore did not want to decrease the consumption, and pointed out that, as a matter of fact consumption was kept at a very steady level and neither rose nor fell much. This fact, he argued, spoke for itself in favour of the discretion of the Chancellor of the Exchequer (or his subordinates), who had taxed alcohol as much as was possible, and had raised the greatest amount possible from it, without decreasing consumption and thereby impairing revenue. With regard to the amount of alcohol contained in different beverages, every one must form his own opinion. He had himself seen many estimates, all differing widely, and nobody he believed had the data upon which a figure could be based with any degree of exactitude. He understood Mr. Pittar to be speaking of pure alcohol, and pure alcohol in beer might be put at from 2 up to 8 per cent., in wine from 3 up to 30, while spirit spoke for itself. But it was impossible for any one to say what was the amount of the beer consumed which contained 2 per cent., and what the amount which contained 5 or 8 per cent.; and so all attempts to obtain a common standard of absolute alcohol must be futile.

MISCELLANEA.

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I.—*The Statistics of Wages in the United Kingdom during the last Hundred Years.* (Part VI.) *Wages in the Building Trades.—English Towns.* By A. L. Bowley, M.A.

The material existing for a study of wages in the building trades is very extensive, and is capable of treatment in many different ways. The history of these wages is specially important in economic theory, because the building trades enjoy to a great extent a natural protection, because many of the acts of labour performed have been so little influenced by introduction of machinery, and because the classification and subdivision of work have altered very slowly, so that we are able to observe the effects of the development of modern industry on wages which are only indirectly influenced by it. It has, therefore, been thought worth while to publish *in extenso* a great part of the raw material on which the history of these wages must be based, as having an interest of its own apart from the mere formation of an index-number, which is the purpose immediately in hand.

In this part the wages in those English and Welsh towns, other than London, for which information referring to 1877 or earlier is at all interesting or complete, are tabulated. The towns are arranged partly in alphabetical order, partly in the order which allowed most compression in the tables. The first part of the table contains those towns for which we have data prior to 1860, the latter part those for which the data begin more recently.

The figures for Manchester are given with special fulness; we can trace the history in this case more in detail than in any other towns except London, Edinburgh, and Glasgow, which will be treated later. These figures illustrate very well the nature of the changes which take place, and the inconsistencies which arise from the information extant, and also show the great complication of the master-builder's weekly wage sheet, where each class of workmen has its special rate and working hours. This part of the table might be set as a problem in interpolation, the *quæsitum* being the rate of change year by year from 1810 to 1900.

The chief general source of information is found in trade union reports. All figures which come from the published reports of trade unions or from private inquiries among their officials are printed thus: $\overset{s.}{35}\,\overset{d.}{6}$, while the other figures are distinguished by a different type, thus: $\overset{s.}{35}\,\overset{d.}{6}$. Where figures both from trade union and other sources were found for the same year, they have in general both been printed; so that there are often two lines, one giving the standard minimum recognized by trade unions, the other the rate returned either by the National Association of Master Builders, or at any rate by some person not interested from the workman's point of view; when, in the earlier years, the source of the information is not clearly stated by the authority from whom it is here drawn, it has been assumed that it was from the masters' side. It will be found on examination that there is in general close agreement between the two classes of information, and that the agreement becomes more exact in recent years. This point may be examined in more detail in the report of the Labour Department on Standard Time Rates in 1894. (C.–7567–ii.) Where similar changes are recorded by the two authorities as having taken place not in the same but in consecutive years, the discrepancy is very likely due to difference in the dates in which the accounts are made up. In other cases it will be found that the trade unions raised their standard minimum some time before the masters recognized the change, and there are several indications of compromises. The rate stated by the unions is sometimes above, sometimes below, that stated by the masters; when the latter is the higher, the explanation is often that the masters reckon the week as containing more working hours than do the men; but there are cases when the masters state a higher hourly rate. Many of the changes have consisted in such a combination of reduced hours and higher rates that the week's wage has been affected only to the extent of one or two pence; when the slight difference has been to the disadvantage of the men, there has generally been a further rise in the hourly rate almost immediately.

The number of hours recognized as composing a working week in the winter has changed very often, but it is not improbable that these changes have been nominal rather than real, for the winter's work is ruled chiefly by the light and the weather. The more detailed account to be given for London will show the change from weekly or daily to hourly wages which has taken place almost universally. Since the wage to be earned in a full summer week without overtime is at once the most definite, and that most frequently given, this wage has been adopted as the basis for comparison.

In the tables the following abbreviations have been used: C. for carpenter, M. for mason, B. for bricklayer, S. for slater, Ps. for plasterer, Pb. for plumber, Pa. for painter, L. for labourer. When the wages of labourers vary in different classes, the wage of the bricklayer's labourer is given, unless otherwise stated.

Building Trades. Weekly

Years	....	1795.	1836.	’37.	’38.	’39.	’43.	’49.	’59.	’64.	’65.	’66.	’69.	’72.	’73.	’74.	’76.	’77.
		s. d.	s. d.	s. d.	s. d.	s. d	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d	s. d.	s. d	s. d.	s. d.
Birmingham	C.	—	—	—	—	—	25 -	—	—	26 6	—	—	30 7	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	35 4	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bolton.........	C.	—	—	—	—	—	25 -	—	—	28 -	—	—	30 -	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36 4
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39 4
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39 2
	Ps.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36 4
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 3
Bridgnorth...	B.	—	18 -	18 -	18 -	—	—	—	—	—	—	—	—	—	—	—	—	—
Burnley	C.	—	—	—	—	—	24 -	—	—	26 -	29 3	—	28 -	—	—	—	—	—
Bury	C.	15 - to 18 -	—	—	—	—	22 -	—	—	—	—	—	—	—	—	—	—	—
	M.		—	—	—	—	—	—	—	—	—	—	—	—	—	—	32 4	32 4
	Pa.		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	L.	12 - to 15 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Carlisle	C.	—	—	—	—	—	18 -	—	—	24 -	—	—	27 -	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Colchester ...	C.	—	—	—	15 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	18 -	—	—	—	—	—	—	—	—	—	—	—	—	—
Coventry......	C.	—	—	—	—	—	—	—	—	24 -	—	—	27 -	—	—	—	—	—
		15 -	—	—	23 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		14 -	—	—	21 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	L.	10 -	—	—	14 -	—	—	—	—	—	—	—	—	—	—	—	—	—
Derby	C.	—	—	—	—	—	23 -	—	—	24 -	—	—	28 -	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	21 -	—	23 -	—	26 -	—	28 -	32 8	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exeter	C.	—	—	—	—	—	26 -	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fleetwood ...	C.	—	—	—	—	—	21 -	—	—	—	—	—	—	—	—	—	—	—
Halifax	C.	12 - to 15 -	—	—	—	—	22 -	—	—	—	—	—	—	—	—	—	—	—
			—	—	—	—	—	—	27 -	—	—	—	—	—	—	—	—	—
	M.		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 10
			—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Huddersfield	C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	22 -	—	23 -	24 -	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34 -
		—	—	—	—	24 -	—	27 -	24 -	—	—	—	—	—	—	—	—	—
	Ps.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	20 -	—	21 -	24 -	—	—	—	—	—	—	—	—	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	22 -	—	22 -	24 -	—	—	—	—	—	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	21 -	—	22 -	24 -	—	—	—	—	—	—	—	—	—
	L.	—	—	—	—	15 -	—	16 -	16 -	—	—	—	—	—	—	—	—	—

Summer Wages. ENGLAND.

'78.	'79.	'80.	'83.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	*s. d.*	*s. d.*	*s. d*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d*	*s. d.*
—	—	—	—	—	—	36 -	36 -	36 -	38 3	38 3	38 3	40 6	40 6	40 6	40 6	40 6	40 6	40 4	40 4
—	—	36 -	36 -	36 -	36 -	36 -	36 -	36 -	38 3	38 3	38 3	40 6	40 6	40 6	40 6	—	—	—	—
—	—	—	—	38 3	—	38 3	38 3	38 3	40 6	40 6	40 6	40 6	40 6	40 6	40 6	40 6	40 6	40 4	42 6
—	—	38 3	38 3	38 3	38 3	38 3	38 3	38 3	40 6	40 6	40 6	40 6	40 6	40 6	40 6	—	—	—	—
—	40 -	—	—	—	—	36 -	36 -	36 -	38 3	38 3	40 6	40 6	40 6	40 6	40 6	40 6	40 6	42 9	42 9
—	—	36 -	36 -	36 -	36 -	36 -	36 -	36 -	38 3	38 3	38 3	40 6	40 6	40 6	40 6	—	—	—	—
—	—	—	—	—	—	36 4	36 4	36 4	36 4	36 10	36 10	36 10	36 10	37 1	37 1	37 1	37 1	37 1	37 1
—	—	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 10	36 10	36 10	37 1	37 1	—	—	—	—
—	—	—	34 4	34 4	34 4	34 4	34 4	34 4	34 4	34 4	36 4	36 4	36 4	36 4	36 4	36 4	26 4	36 4	38 4
—	—	36 4	34 4	34 4	34 4	34 4	34 4	34 4	34 4	34 4	36 4	36 4	36 4	36 4	36 4	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	39 2	39 2	41 3	41 3	41 3	41 3
—	—	37 1	36 1	35 1	35 1	35 1	35 1	35 1	35 1	35 1	37 1	37 1	37 1	39 2	39 2	—	—	—	—
—	—	—	—	—	—	—	—	—	—	39 4	39 9	39 9	39 9	39 9	39 9	39 9	39 9	41 3	41 3
—	—	34 8	34 8	36 -	36 -	36 -	36 -	34 8	34 8	34 8	39 -	39 -	39 -	39 -	39 -	—	—	—	—
—	—	23 -	24 -	22 8	22 8	22 8	22 8	22 8	22 8	22 8	24 9	26 10	26 10	26 10	26 10	26 10	26 10	26 10	26 10
—	—	—	—	—	—	24 9	24 9	26 1	28 3	28 3	30 7	30 7	30 7	30 7	30 7	30 7	30 7	30 7	30 7
—	—	—	—	30 4	—	30 4	31 6	31 6	31 6	33 9	33 9	33 9	33 -	34 -	34 -	34 -	34 -	34 -	34 -
—	—	—	—	—	—	33 9	33 5	33 5	33 5	35 8	37 10	37 10	37 10	37 10	40 1	40 1	40 1	40 1	40 1
32 4	32 4	32 4	32 4	32 4	32 4	32 4	32 4	32 4	34 4	34 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	38 4	38 4
—	—	—	—	—	—	—	—	—	31 9	34 1	34 1	34 1	34 1	36 -	36 -	36 -	36 -	36 -	36 -
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 9	29 -	29 -	29 -	29 -
—	—	—	—	—	—	30 4	30 4	30 4	30 4	30 4	32 7	32 7	32 7	32 7	32 7	32 3	33 4	33 4	33 4
—	—	—	—	29 3	29 3	29 3	29 3	29 3	29 3	29 3	29 3	29 3	32 7	32 7	32 7	—	—	—	—
—	—	—	—	—	—	28 3	28 3	28 3	28 3	28 3	30 7	30 7	30 7	30 7	30 7	30 7	30 7	30 7	32 11
—	—	—	—	—	—	28 3	28 3	28 3	28 3	28 3	30 7	30 7	30 7	33 -	33 -	33 -	33 -	35 4	35 4
—	—	—	—	—	—	—	—	—	—	—	—	30 7	—	—	—	—	—	—	—
—	—	—	—	—	—	32 11	32 11	32 11	35 4	35 4	35 4	37 8	37 8	37 8	37 8	37 8	40 6	40 6	40 6
—	—	—	—	32 11	32 11	30 7	30 7	30 7	32 11	35 4	35 4	37 8	37 8	37 8	37 8	—	—	—	—
—	—	—	—	—	—	37 8	37 8	35 3	37 8	37 8	37 8	37 8	39 8	37 8	37 8	37 8	40 6	39 9	39 9
—	—	—	—	32 11	35 4	35 4	35 4	35 4	35 4	35 4	37 8	38 10	37 8	37 8	37 8	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	35 -	35 -	35 -	35 -	35 -	37 4	37 4	37 4	37 4	37 4	37 4	37 4	39 8	39 8
—	—	—	—	35 -	35 -	35 -	35 -	35 -	35 -	35 -	37 4	37 4	37 4	37 4	37 4	—	—	—	—
—	—	—	—	—	—	—	—	—	—	32 8	32 8	35 -	35 -	35 -	35 -	35 -	35 -	35 -	35 -
—	—	—	—	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	35 -	35 -	35 -	—	—	—	—
—	—	—	—	—	—	27 1	27 1	27 1	27 1	28 3	30 7	30 7	30 7	30 7	30 7	30 7	33 5	33 5	33 5
—	—	—	—	25 9	25 9	25 9	24 2	24 2	24 2	24 2	27 -	30 7	30 7	30 7	30 7	—	—	—	—
—	—	—	—	—	—	31 -	30 -	31 6	31 6	33 9	33 9	34 1	34 1	34 1	34 1	34 1	36 -	36 -	37 3
—	—	—	—	—	—	29 2	29 2	29 2	29 2	29 2	29 2	29 2	30 3	30 3	30 3	30 3	32 -	32 -	32 -
—	—	—	—	29 2	29 2	29 2	29 2	29 2	29 2	29 2	29 2	29 2	29 2	29 2	29 2	—	—	—	—
29 10	29 10	29 10	29 10	29 10	29 10	29 20	31 8	31 8	32 -	33 -	33 -	35 -	35 -	35 -	35 -	35 -	37 1	37 1	37 1
—	—	—	—	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	—	—	—	—
—	—	—	—	—	—	—	28 2	28 2	28 2	28 2	29 2	29 2	29 2	29 2	32 -	32 -	32 -	35 1	35 1
—	—	—	—	—	28 2	28 2	28 2	28 2	28 2	28 2	28 2	29 2	29 2	29 2	29 2	—	—	—	—
34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	31 3	31 3	33 -	33 -	33 -	33 -	33 -	35 1	37 1	37 1	37 1
—	—	—	—	—	31 3	31 3	31 3	31 3	31 3	31 3	33 -	33 -	33 -	33 -	33 -	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 3	33 -	33 -	33 -	35 1
—	—	—	—	—	30 3	30 3	30 3	30 3	30 3	30 3	30 3	30 3	30 3	30 3	30 3	—	—	—	—
—	—	—	—	—	—	—	30 8	30 8	30 8	30 8	30 8	30 8	30 8	30 8	30 8	31 3	31 3	31 3	31 3
—	—	—	—	—	30 8	30 8	30 8	30 8	30 8	30 8	30 8	30 8	30 3	30 3	31 9	—	—	—	—
—	—	—	—	—	—	—	—	—	28 11	28 11	28 11	30 11	—	—	—	—	—	—	—
—	—	—	—	—	29 -	29 -	29 -	29 -	29 -	30 1	30 1	30 11	30 11	30 11	30 11	30 11	33 5	33 5	33 5
—	—	—	—	—	20 10	20 10	20 10	20 10	20 10	20 10	20 10	20 7	20 7	20 7	20 7	22 8	24 9	24 9	24 9

Building Trades. Weekly Summer

Years	....	1795.	'96.	1836.	'37.	'38.	'43.	'61.	'64.	'69.	'72.	'73.	'74.	'75.	'77.	'78.	'79.	'80.
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s d.*	*s. d.*
Kidder-minster..	C.	—	—	18 - to 20 -	18 - to 21 -	18 - to 21 -	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	16 - to 19 -	16 - to 19 -	16 - to 19 -	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	18 - to 20 -	18 - to 21 -	18 - to 21 -	—	—	—	—	—	—	30 7	33 -	—	31 9	—	—
	Ps.	—	—	18 -	to	21 -	—	—	—	—	—	—	—	—	—	—	—	—
	L.	—	—	10 -	10 -	10 -	—	—	—	—	—	—	—	—	—	—	—	—
Lancaster ...	C.	—	18 -	—	—	—	21 -	—	23 -	24 -	—	—	—	—	—	—	—	—
	M.	—	18 -	—	—	—	—	—	—	—	—	—	—	30 11	30 11	30 11	30 11	30 11
	L.	—	12 - to 15 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Leeds	C.	15 -	—	—	—	—	—	—	24 6	30 4	—	—	—	—	33 4 33 4	—	—	—
	M.	15 - to 18 -	—	—	—	—	—	—	—	—	—	—	—	—	36 4	—	—	—
	B.		—	—	—	—	—	—	—	—	—	—	—	—	31 3 35 5	—	—	—
	L.	12 -	—	—	—	—	—	—	—	—	—	—	—	—	16 8 25 -	—	—	—
Norwich......	C.	—	—	—	—	18 - to 21 -	20 -	—	—	'65. 22 1	—	—	—	—	—	—	—	—
	B.	—	—	—	—	15 - to 18 -	—	—	—	—	—	—	—	—	—	—	—	—
Oldham	C.	—	—	—	—	—	23 -	-	26 -	'69. 29 -	—	—	—	—	—	—	—	—
Preston	C.	15 - to 16 -	—	—	—	—	21 -	—	25 -	28 - or 29 -	28 -	28 -	32 -	32 -	35 -	35 -	35 -	31 -
	M.	18 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B.	18 -	—	—	—	—	—	30 -	—	—	—	—	—	—	—	—	—	—
	L.	13 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Reading	C.	—	—	—	—	18 - to 26 -	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	18 - to 26 -	—	—	—	—	—	—	—	—	37 -	37 -	37 -	37 -
	B.	—	—	—	—	18 - to 26 -	—	21 -	—	—	—	—	—	—	—	—	—	—
St. Helens ...	C.	—	—	—	—	—	22 -	—	28 -	30 -	—	—	—	—	—	—	—	—
Sheffield	C.	—	—	—	—	—	24 -	—	27 -	30 -	—	—	—	—	—	—	—	30 11
Stroud.........	C.	—	—	15 -	15 -	15 -	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	15 -	15 -	15 -	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	15 -	15 -	15 -	—	—	—	—	—	—	—	—	—	—	—	—
	Pb.	—	—	15 -	15 -	15 -	—	—	—	—	—	—	—	—	—	—	—	—
	L.	—	—	10 -	10 -	10 -	—	—	—	—	—	—	—	—	—	—	—	—

Wages. ENGLAND—*Contd.*

'81.	'82.	'83.	'84.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	—	—	—	—	33 -	33 -	33 -	33 -	33 -	34 1	34 1	34 1	34 1	34 1	34 1	35 3	35 3	37 8
—	—	—	—	33 -	33 -	33 -	33 -	33 -	33 -	33 -	34 1	34 1	34 1	34 1	34 1	—	—	—	—
—	—	—	—	—	—	34 1	34 1	34 1	34 1	34 1	38 10	36 6	36 6	36 6	36 6	36 6	36 6	36 6	36 6
—	—	—	—	34 1	34 1	34 1	34 1	34 1	35 4	34 1	36 6	36 6	36 6	36 6	36 6	—	—	—	—
—	—	—	—	—	—	31 9	31 9	31 9	31 9	34 1	34 1	36 6	36 6	36 6	36 6	36 6	37 8	37 8	37 8
—	—	—	—	31 9	31 9	31 9	31 9	31 9	31 9	34 1	34 1	34 1	36 6	36 6	36 6	—	—	—	—
—	—	—	—	—	—	—	—	—	—	32 4	32 4	32 4	34 8	34 8	34 8	34 8	34 8	34 8	34 8
—	—	—	—	30 7	30 7	33 -	33 -	33 -	30 7	32 11	32 11	32 11	32 11	35 4	35 4	—	—	—	—
—	—	—	—	21 2	21 2	21 2	21 2	21 2	21 2	21 2	21 2	22 4	23 6	23 6	23 6	23 6	23 6	23 6	23 6
—	—	—	—	—	—	30 -	30 -	30 -	31 3	31 3	33 6	32 11	32 11	32 11	32 11	32 11	32 11	35 2	36 4
—	—	—	—	31 3	31 3	31 3	31 3	31 3	31 3	31 3	31 3	32 11	32 11	32 11	32 11	—	—	—	—
30 11	30 11	30 11	30 11	30 11	30 11	30 11	30 11	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	37 1	37 1	37 1	39 2
—	—	—	—	30 11	30 11	30 11	30 11	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	—	—	—	—
—	—	—	—	23 10	23 10	23 10	23 10	23 10	23 10	23 10	23 10	22 8	26 7	22 8	22 8	—	—	—	—
—	—	—	—	—	—	31 3	31 3	33 4	33 4	33 4	33 4	33 4	33 4	35 1	35 1	35 1	37 1	37 1	37 1
—	—	—	—	—	—	—	—	—	33 4	33 4	33 4	33 4	33 4	35 1	35 1	—	—	—	—
—	—	—	—	—	—	33 4	33 4	33 4	33 4	33 4	35 5	35 5	35 5	35 5	35 1	35 1	37 1	37 1	37 1
—	—	—	—	33 4	33 4	33 4	33 4	33 4	35 5	35 5	35 5	35 5	35 5	35 5	35 5	—	—	—	—
—	—	—	—	—	—	—	33 4	33 4	35 5	35 5	35 5	35 5	35 5	35 5	37 1	37 1	37 1	37 1	37 1
—	—	—	—	33 4	33 4	33 4	33 4	33 4	35 5	35 5	35 5	35 5	35 5	35 5	35 5	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 -	—	—	—	—	—
—	—	—	—	20 10	20 10	20 10	20 10	22 11	25 -	25 -	25 -	25 -	25 -	25 -	26 -	26 10	26 10	26 10	26 10
—	—	—	—	30 4	—	30 4	30 4	30 4	30 4	32 8	32 8	32 8	32 8	32 8	32 8	34 -	34 -	35 -	35 -
—	—	—	—	—	31 6	28 -	28 -	28 -	28 -	28 -	28 -	Strike.		—	—	—	—	—	—
—	—	—	—	26 10	—	28 -	28 -	28 -	28 -	30 4	30 4	30 4	30 4	30 4	30 4	32 8	32 8	35 -	35 -
—	—	—	—	—	26 10	24 6	24 6	24 6	24 6	24 6	24 6	Strike.		—	—	—	—	—	—
—	—	—	—	—	—	32 2	32 2	32 2	34 4	34 4	34 4	36 5	36 5	36 5	36 5	36 5	36 5	38 3	40 4
—	—	—	—	32 2	32 2	32 2	32 2	33 3	33 3	33 3	34 4	34 4	36 5	36 5	36 5	—	—	—	—
31 -	31 -	31 -	31 -	31 -	—	31 -	31 -	31 -	31 -	33 -	33 -	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1
—	—	—	—	30 5	30 5	30 5	30 5	30 5	30 5	33 -	33 -	33 -	33 -	33 -	33 -	—	—	—	—
—	—	—	—	35 1	35 1	35 1	35 1	35 1	35 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	39 2	39 2	41 3
—	—	—	—	35 1	35 1	35 1	35 1	35 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	—	—	—	—
—	—	—	—	—	—	—	—	—	—	36 1	36 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1
—	—	—	—	36 1	36 1	36 1	36 1	36 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	—	—	—	—
—	—	—	—	22 8	22 8	22 8	22 8	23 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9
—	—	—	—	—	—	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	35 4	35 4	36 8	36 8	36 8
—	—	—	—	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	—	—	—	—
37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	39 4	39 4	39 4
—	—	—	—	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	37 -	—	—	—	—
—	—	—	—	—	—	32 11	32 11	32 11	32 11	32 11	32 11	32 11	35 4	35 4	35 4	37 8	37 8	37 8	37 8
—	—	—	—	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	35 4	35 4	—	—	—	—
—	—	—	—	—	—	34 4	34 4	36 8	36 8	36 -	36 -	36 -	35 5	35 5	35 5	37 6	37 6	37 6	37 6
—	—	—	—	34 4	34 4	34 4	34 4	34 4	36 8	36 8	36 8	36 8	35 5	35 5	35 5	—	—	—	—
—	—	—	—	—	—	31 -	35 -	35 3	35 3	33 -	33 -	35 1	35 1	35 1	35 1	35 1	35 1	35 1	37 1
—	—	28 10	—	28 10	28 10	28 10	28 10	30 11	30 11	33 -	33 -	35 1	35 1	35 1	35 1	—	—	—	—
—	—	—	—	—	—	—	—	—	23 4	24 8	24 8	25 11	25 11	25 11	25 11	25 11	25 11	25 11	25 11
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 3
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 3	30 7	30 7
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32 11
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 10

Building Trades. Weekly

Years		1795.	'96.	1834.	'40.	'43.	'50.	'55-58.	'60.	'61.	'62.	'64.	'65.	'67-68.	'69.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Ashton-under-Lyne and Hyde	C.	—	—	—	—	24 -	—	—	—	—	—	26 - or 27 -	—	—	30 -
Hull	C.	—	—	—	—	21 -	— Joiners	— 21 -	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	— 18 -	—	—	—	—	—	—	—
	Pa.	—	—	—	—	—	—	21 -	—	24 -	24 -	—	—	—	—
Newcastle ...	C.	—	15 -*	18 - to 21 -	18 - to 22 -	20 -	20 - to 22 -	—	24 -	—	—	—	—	27 -	—
	M.	—	15 -*	21 -	20 - to 22 -	—	21 - to 24 -	—	24 -	—	—	—	27 -	30 -	—
	B.	—	—	18 - to 20 -	20 - to 22 -	—	21 - to 24 -	—	27 -	—	—	—	—	33 -	—
	S.	—	—	18 - to 24 -	—	—	—	—	—	—	—	—	—	30 -	—
	Pb.	—	—	—	22 -	—	24 -	—	26 -	—	—	—	—	30 -	—
	L.	—	—	—	12 - to 15 -	—	12 - to 14 -	—	12 - to 14 -	—	—	—	—	19 6 to 28 -	—
South Shields	C.	18 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nottingham	C.	—	—	—	—	23 -	—	—	—	—	—	26 -	24 -	—	29 2
	M.	—	—	—	—	—	—	—	—	—	—	—	30 6	—	—
Stockport ...	C.	—	—	—	—	23 -	—	—	—	—	—	26 -	30 1	—	30 8
	B.	—	—	—	—	—	—	—	—	—	30 -	—	—	—	—

* North Shields.

Years		1793.	1815.	'21.	'25.	'29.	'32.	'38.	'43.	'64.	'69.	'85.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Macclesfield	C.	18 -	24 -	24 -	24 -	24 -	24 -	24 -	23 -	24 -	27 -	32 11
	B.	18 -	24 -	24 -	24 5	24 -	24 -	22 -	—	—	—	34 1
	L.	10 -	16 -	—	18 -	15 -	15 -	14 - or 15 -	—	—	—	21 7

Summer Wages. England—*Contd.*

'73.	'77.	'80.	'83.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
36 4	36 4	34 1	34 1	34 1	34 1	34 1	34 1	34 1	36 4	36 4	36 4	36 4	36 4	36 4	38 -	38 -	38 -	40 1	40 1
—	—	—	—	34 1	34 1	34 1	34 1	34 1	34 1	34 1	36 4	36 4	36 4	36 4	36 4	—	—	—	—
—	—	—	—	—	—	30 11	30 11	30 11	33 2	33 2	35 4	35 4	35 4	35 4	35 4	37 6	37 6	37 6	39 9
—	—	—	—	30 11	30 11	30 11	30 11	30 11	30 11	33 2	35 4	35 4	35 4	35 4	35 4	—	—	—	—
—	—	—	—	—	—	—	—	30 11	33 2	35 4	35 4	35 4	35 4	35 4	35 4	37 6	39 9	39 9	39 9
—	—	—	—	30 11	30 11	30 11	30 11	30 11	30 11	30 11	35 4	35 4	35 4	35 4	35 4	—	—	—	—
—	—	—	—	30 11	30 11	30 11	30 11	30 11	30 11	30 11	30 11	30 11	33 2	33 2	33 2	33 2	35 4	35 4	35 4
—	—	—	—	—	—	33 4	33 4	33 4	35 5	35 5	35 5	35 5	37 6	37 6	37 6	41 8	41 8	41 8	41 8
—	—	—	—	—	—	—	—	—	—	—	—	35 5	37 6	37 6	37 6	—	—	—	—
—	38 -	31 4	—	33 4	33 4	33 4	33 4	33 4	35 5	37 6	37 6	37 6	37 6	37 6	37 6	37 6	37 1	37 1	37 1
—	—	—	—	—	—	—	—	—	—	—	—	37 6	37 6	37 6	37 6	—	—	—	—
—	—	—	—	—	—	33 6	33 4	35 5	37 6	37 6	37 6	37 6	37 6	37 6	37 6	41 8	41 8	41 8	41 8
—	—	—	—	—	—	—	—	—	—	—	—	37 6	37 6	37 6	37 6	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	36 5	36 5	36 5	36 5	37 6	37 6	39 7	39 7
—	—	—	—	—	—	—	38 3	37 2	37 2	37 2	37 2	37 2	40 6	40 6	39 9	39 9	39 9	39 9	39 9
—	—	—	—	—	—	—	—	—	—	—	—	37 1	40 6	40 6	40 6	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	25 -	25 -	25 -	25 -	25 -	25 -	25 -	25 -
—	—	—	—	—	—	33 4	33 4	33 4	35 5	35 5	35 5	35 5	37 6	37 6	37 6	37 6	37 6	37 6	41 8
—	35 5	31 3	33 4	33 4	33 4	33 4	33 4	35 5	35 5	35 5	35 5	35 5	35 5	35 5	35 5	—	—	—	—
—	—	—	—	—	—	36 -	36 -	36 -	36 -	38 3	37 6	37 6	37 6	37 6	37 6	37 6	37 1	37 1	37 1
—	35 5	31 4	31 3	31 3	31 3	31 3	31 3	35 5	35 5	35 5	37 6	37 6	37 6	37 6	37 6	—	—	—	—
—	—	—	—	—	—	34 4	34 4	34 4	37 6	37 6	37 6	37 6	37 6	37 6	37 6	37 6	41 8	41 8	41 8
—	35 5	32 3	33 4	34 4	34 4	34 4	34 4	37 6	37 6	37 6	37 6	37 6	37 6	37 6	37 6	—	—	—	—
—	35 5	30 -	30 -	30 -	30 -	30 -	30 -	33 -	35 5	35 5	35 5	36 5	36 5	36 5	36 5	37 6	37 6	37 6	37 6
—	—	—	—	—	—	—	33 9	33 9	33 9	33 1	33 9	33 9	33 9	33 9	33 9	36 5	36 5	36 5	36 5
—	36 -	33 9	33 9	33 9	33 9	33 9	33 9	34 6	34 6	34 6	34 6	34 6	34 6	34 6	34 6	—	—	—	—
—	21 10	21 -	20 10	25 -	25 -	25 -	25 -	27 1	27 1	27 1	27 1	27 1	27 1	27 1	27 1	27 1	27 1	27 1	27 1
—	38 3	38 3	—	36 -	—	36 -	36 -	36 -	36 -	36 -	36 -	38 3	38 3	38 3	38 3	38 3	40 1	40 1	40 1
—	35 -	38 3	38 3	36 -	36 -	36 -	36 -	36 -	36 -	36 -	36 -	38 3	38 3	38 3	38 3	—	—	—	—
—	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	40 10	40 10	40 10
—	37 1	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	39 -	—	—	—	—
Max	36 4	33 -	33 -	33 -	—	32 11	32 11	32 11	35 2	36 4	36 4	36 4	36 4	36 4	36 4	38 5	38 3	40 10	40 10
—	—	—	—	—	—	—	—	—	—	—	36 4	36 4	36 4	36 4	36 4	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	40 10	40 10	40 10	40 10	43 2	43 2	43 2	43 2
—	—	—	—	—	—	—	—	—	—	—	40 10	40 10	40 10	10 10	40 10	—	—	—	—

'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	34 1	34 1	34 1	34 1
32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	—	—	—	—
—	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1
34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	—	—	—	—
21 7	21 7	21 7	21 7	21 7	21 7	21 7	21 7	23 3	23 3	23 3	23 3	23 3	23 3	23 3

Building Trades. Weekly

Years		1833.	'43.	'55-8.	'59.	'60-2.	'64.	'65.	'69.	'75.	'76.	'77.	'78.	'80.	'81.	'82.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Liverpool ...	C.	—	24 -	—	—	—	28 -	—	31 -	36 8	36 8	36 8	36 8	34 4	34 4	34 4
		—	—	27 -	27 - or 26 -	27 -	—	—	—	—	—	37 10	—	34 4 to 39 -	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	36 8	36 8	36 8
		—	—	28 6	30 -	30 -	—	—	—	—	—	37 -	—	36 8	—	—
	B.	—	—	—	—	30 -	—	—	—	35 6	39 -	—	41 3	36 8	—	—
		—	—	28 6	28 6	30 -	—	—	—	—	—	41 3	—	36 8	—	—
	Ps.	24 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	26 -	26 -	26 -	—	—	—	—	—	37 -	—	36 8	—	—
	Pb.	—	—	—	—	—	—	33 -	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	39 -	—	36 8	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	27 - or 26 -	—	—	—	—	—	—	34 4	—	33 3	—	—
	L.	—	—	18 -	18 -	18 -	—	—	—	—	—	23 - to 26 4	—	24 -	—	—

Years		1815.	'43.	'50-54.	'55.	'56.	'57.	'58.	'59.	'60.	'61.	'63.	'64.	'69.	'77.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Bristol	C.	—	22 -	—	—	—	—	—	—	—	—	—	26 -	29 5	—
		—	—	—	22 - to 26 -			22 -	24 -	24 4 to 26 6	—	27 -	—	—	33 9
	*	—	—	18 - to 20 -	—	20 - to 22 -	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	21 - to 25 -			22 -	24 -	27 -	—	27 -	—	—	36 -
	*	—	—	—	—	—	—	24 -	28 -	28 -	—	—	—	—	36 -
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	36 -
	Ps.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		16 - averaged through year	—	—	21 - to 24 -				—	—	—	22 - to 27 -	—	—	33 9
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	21 - to 26 -			22 -	22 -	26 6	—	24 - to 25 -	—	—	31 6 to 36 -
	L.	(Mason's in '55-63)	—	—	14 -	14 -	14 -	14 -	14 -	15 -	—	16 -	—	—	21 4

* From private inquiries

Bath	Years......	1831.	1840.	
		s. d.	s. d.	
	C.	12 -†	15 -†	Rose in Crimean War and in 1860-70†
	M.	12 -†	15 -†	,, ,,
	L.	10 -†	—	,, ,,

† From private

Summer Wages. ENGLAND—*Contd.*

'83.	'84.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
34 4	34 4	34 4	—	34 4	34 4	34 4	36 8	36 8	36 8	35 5	35 5	35 5	37 6	37 6	39 2	39 2	39 2
34 4	—	34 4	34 4	34 4	34 4	34 4	34 4	36 8	36 8	38 11	35 5	35 5	35 5	—	—	—	—
36 8	36 8	36 8	36 8	36 8	36 8	36 8	35 1	35 1	37 1	37 1	37 1	37 1	37 1	37 1	39 2	39 2	39 2
36 8	—	36 8	36 8	36 8	36 8	36 8	36 8	35 1	37 1	37 1	37 1	37 1	37 1	—	—	—	—
—	—	—	—	36 8	36 8	36 8	36 8	38 11	38 11	38 11	37 6	37 6	37 6	37 6	39 2	39 2	39 2
36 8	—	36 8	36 8	36 8	36 8	36 8	36 8	38 11	38 11	38 11	37 6	37 6	37 6	—	—	—	—
—	—	—	—	—	—	—	—	38 11	39 3	39 3	37 6	37 6	37 6	37 6	39 2	39 2	39 2
36 8	—	36 8	36 8	36 8	36 8	36 8	36 8	38 11	38 11	38 11	37 6	37 6	37 6	—	—	—	—
—	—	35 -	—	—	36 8	36 8	38 11	38 11	38 11	38 11	37 6	37 6	37 6	37 6	39 2	39 2	39 2
36 8	—	36 8	36 8	36 8	36 8	36 8	38 11	38 11	38 11	38 11	37 6	37 6	37 6	—	—	—	—
—	—	—	—	—	—	—	—	34 4	—	34 4	33 4	33 4	33 4	33 4	33 4	33 4	35 1
33 3	—	33 3	33 3	33 3	—	34 4	33 3	34 4	34 4	34 4	33 4	33 4	33 4	—	—	—	—
24 -	—	24 1	24 1	24 1	24 1	24 1	22 11	22 11	22 11	22 11	22 11	22 11	22 11	22 11	22 11	22 11	22 11

'78.	'80.	'82.	'83.	'85-86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95-96.	'97.	'98-99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	—	—	—	31 6	31 6	31 6	33 9	33 9	33 9	36 -	36 -	36 -	36 -	38 3	38 3
—	31 6	—	27 -	22 6 to 31 6	22 6 to 31 6	22 6 to 31 6	31 6	33 9	33 9	33 9	36 -	36 -	36 -	—	—	—
31 6	33 9	Unchanged till 1895											36 -	—	—	—
—	31 6	31 6	31 6	31 6	31 6	31 6	31 6	33 9	33 9	36 -	36 -	36 -	36 -	36 -	38 3	38 3
—	33 9	—	33 9	27 - to 33 9	27 - to 33 9	27 - to 33 9	31 6	33 9	33 9	33 9	36 -	36 -	36 -	—	—	—
33 9	—	31 6	33 9	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	31 6	31 6	31 6	33 9	31 6	38 7	38 7	38 7	38 7	38 7	38 3	38 3
—	33 9	—	34 -	27 - to 33 9	27 - to 33 9	27 - to 33 9	31 6	33 9	33 9	33 9	36 -	36 -	36 -	—	—	—
—	—	—	—	—	—	—	—	—	32 9	35 4	35 4	35 4	35 4	35 4	38 3	40 6
—	31 6	—	34 -	27 - to 33 9	27 - to 33 9	27 - to 33 9	31 6	33 9	33 9	33 9	36 -	36 -	36 -	—	—	—
—	—	—	—	—	—	31 6	31 6	31 6	31 6	31 6	33 9	33 9	33 9	36 -	36 -	36 -
—	31 6	—	27 -	22 6 to 31 6	22 6 to 31 6	22 6 to 31 6	29 3	31 6	31 6	31 6	33 9	33 9	33 9	—	—	—
—	20 3	—	18 -	13 6 to 22 6	13 6 to 22 6	13 6 to 22 6	19 2	20 3	20 3	20 3	22 6	22 6	22 6	22 6	24 9	24 9

by Mr. G. H. Wood.

1864.	1869.	1887-90.	1891-92.	1893-96.	1897-1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
25 -	28 -	28 -	30 4	30 4	32 8
—	—	30 4	30 4	32 8	32 8
—	—	—	—	18 8	18 8

inquiries.

Building Trades. Weekly

Years		1839.		1849.		1859.		1860.		1862.		1863.		1885.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Worcester	C.	—		—		—		—		—		—		—	
		22	–	22	–	22	–	24	–	24	–	22	–*	31	6
	M.	—		—		—		—		—		—		31	6†
		22	–	24	–	25	–	25	–	27	–	27	–	31	6
	B.	—		—		—		—		—		—		—	
		21	–	22	–	23	–	24	–	24	–	24	–	31	6
	S.	22	–	22	–	23	–	23	–	24	–	—		—	
	Ps.	—		—		—		—		—		—		—	
		22	–	22	–	23	–	23	–	24	–	24	–	31	6
	Pb.	—		—		—		—		—		—		—	
		24	–	26	–	26	–	26	–	26	–	24	–	31	6
	Pa.	—		—		—		—		—		—		—	
		20	–	22	–	23	–	23	–	23	–	22	–	29	3
	L.	14	–	15	–	16	–	16	–	16	–	15	–	18	–

* Joiners 24s. † Since 1880.

The chief authorities for the various dates are as follows, unless otherwise stated:—

For 1795-96, Eden's *State of the Poor*;—for 1815-38, the Report of the *Handloom Weavers' Commission*, 1838-41;—for Brighton (1877), Cardiff (1880, 1883), Bristol (1855-63, 1877, 1880, 1883), Oxford (1877), Worcester (1839, 1849, 1859, 1860, 1862-63). Wolverhampton (1877, 1880, 1883), Birmingham (1880, 1883), Leicester (1866, 1877, 1880, 1883), Nottingham (1877, 1880, 1883), Warrington (1877, 1880, 1883), Liverpool (1855-62, 1877, 1880, 1883), Bolton (1877, 1880, 1883), Blackburn (1855-57, 1863), Huddersfield (1839, 1849, 1859), Bradford (1877, 1880, 1883), Leeds (1877), Sheffield (1880, 1883), Hull (1855-58, 1861, 1863), South Shields (1877, 1880, 1883), and Newcastle (1834, 1840, 1850, 1860, 1867-68), the Report of the Board of Trade on *Returns of Wages between* 1830 and 1886 (C–5172);—for Liverpool (1833), Bricklayers in 1861, Carpenters in 1843, 1864, 1869,

Summer Wages. ENGLAND—*Contd.*

1886-87.	1888.	1889.	1890.	1891.	1892.	1893-98.	1899.	1900.
s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
31 6	31 6	31 6	33 9	33 9	33 9	36 –	37 1	38 3
31 6	31 6	31 6	31 6	33 9	33 9	36 –	—	—
31 6	31 6	31 6	33 9	33 9	36 –	36 –	37 1	38 3
31 6	31 6	31 6	31 6	33 9 to 34 11	33 9	36 –	—	—
31 6	31 6	31 6	31 6	33 9	36 –	36 –	36 –	36 –
31 6	31 6	31 6	31 6	31 6	34 10	36 –	—	—
—	—	—	—	31 6	33 9	33 9	1894. 36 –	—
—	—	—	—	—	—	33 8	36 –	36 –
31 6	31 6	31 6	31 6	31 6	33 9	36 –	—	—
—	—	—	31 6 to 33 9	33 9 to 36 –	33 9 to 33 –	33 9‡ to 36 –	36 –‡	38 3‡
31 6	31 6	31 6	31 6	31 6	33 9	33 9	—	—
—	—	—	—	29 3	31 6	31 6	31 6	31 6
29 3	29 3	29 3	29 3	29 3	31 6	31 6	—	—
18 –	18 –	18 –	18 –	18 –	19 3	22 6	22 6	22 6

‡ Exact course of wages a little uncertain.

and most other trade union figures prior to 1887, the Webb *Collection of Trade Union Reports and Documents* in the Library of Political Science;—for 1886 and 1891, the returns from the Master-builders given in the *General Report on Wages*, 1893 (C–6889);—for sequence of wages from 1865-85, the *Commission on Trade Depression*, 1886, answers to circulars issued to Trade Unions;—for the sequences from 1885 to 1896, the half-yearly *Reports of the National Association of Master-builders;*—for trade union figures from 1887 to 1892, the 2nd, 3rd, 4th, 5th and 6th *Reports on Trade Unions;*—for figures subsequent to 1892, the *Standard Time Rates*, the *Annual Reports on Changes in Rates of Wages and Hours of Labour* of the Labour Department, and the *Labour Gazette.* In the 2nd *Report on Trade Unions* the statement of the Operative Stonemasons' Friendly Society gives not only current wages but the date of the last revision, by means of which we are often able to look back many years.

Building Trades. Weekly

Years	......	1810-20.	'21.	'22.	'23-4.	'25.	'32.	'33.	'34.	'37.	'39.	'43.	'49.	'50.	'59.	'60.	'61.	'64.	'69.	'70.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
C	(a)	25 -	25 -	26 -	22 -	22 4	24 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	(b)	—	—	—	—	—	—	—	24 -	—	—	—	—	—	—	—	—	—	—	—
	(c)	—	—	—	—	—	—	—	—	—	—	—	—	24 -	—	27 -	—	—	—	32 -
	(d)	Summer wages..............				—	—	—	—	—	26 -	—	28 -	—	28 -	—	—	—	—	—
		Winter ,, ...				—	—	—	—	—	26 -	—	28 -	—	28 -	—	—	—	—	—
		Summer hours, weekly ...				—	—	—	—	—	60	—	58	58	58	55	—	55½	—	54½
		Winter ,, ,, ...				—	—	—	—	—	55	—	55	—	55	—	—	—	—	—
	(e)	—	—	—	—	—	—	—	—	—	—	26 -	—	—	—	—	—	28 -	32 -	—
M......	(a)	22 -	24 -	26 -	22 -	24 -	18 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	(b)	—	—	—	—	—	—	—	24 -	—	—	—	—	—	—	—	—	—	—	—
	(c)	—	—	—	—	—	—	—	—	—	—	—	—	24 -	—	27 -	—	—	—	30 -
	(d)	Summer wages..............				—	—	—	—	—	26 -	—	28 6	—	30 -	—	—	—	—	—
		Winter ,, ...				—	—	—	—	—	24 -	—	26 -	—	27 -	—	—	—	—	—
		Summer hours, weekly ...				—	—	—	—	—	60	—	57½	—	55½	—	—	—	—	54½
		Winter ,, ,, ...				—	—	—	—	—	55	—	50	—	50	—	—	—	—	—
B	(a)	22 6	22 6	25 -	21 -	24 -	17 -	—	—	—	—	—	—	—	—	—	—	—	—	—
	(b)	—	—	—	—	—	—	—	23 -	—	—	—	—	—	—	—	—	—	—	—
	(c)	—	—	—	—	—	—	—	—	—	—	—	—	26 -	—	30 -	—	—	—	32 -
	(d)	Summer wages......				—	—	—	—	—	27 -	—	30 -	—	33 -	—	33 -(e)	—	—	—
		Winter ,, ...				—	—	—	—	—	27 -	—	27 -	—	30 -	—	—	—	—	—
		Summer hours, weekly ...				—	—	—	—	—	60	—	57½	—	55½	—	55½(e)	—	—	—
		Winter ,, ,, ...				—	—	—	—	—	53	—	50	—	50	—	—	—	—	—
S	(d)	Summer wages..............				—	—	—	—	—	22 -	—	24 -	—	26 -	—	—	—	—	—
		Winter ,, ...				—	—	—	—	—	22 -	—	24 -	—	26 -	—	—	—	—	—
		Summer hours, weekly ...				—	-	—	—	—	60	—	57½	—	58	—	—	—	—	—
		Winter ,, ,, ...				—	—	—	—	—	53	—	50	—	50	—	—	—	—	—
Ps. ...	(c)	—	—	—	—	—	—	—	—	—	—	—	—	26 -	—	28 -	—	—	—	32 -
	(d)	Summer wages..				—	—	—	—	—	26 -	—	26 -	—	28 -	—	—	—	—	—
		Winter ,, ...				—	—	—	—	—	26 -	—	26 -	—	28 -	—	—	—	—	—
		Summer hours, weekly ...				—	—	—	—	—	60	—	60	—	58	—	—	—	—	—
		Winter ,, ,, ...				—	—	—	—	—	53	—	53	—	53½	—	—	—	—	—
Pb. ...	(d)	Summer wages..............				—	—	—	—	—	27 -	—	28 -	—	28 -	—	—	—	—	—
		Winter ,, ...				—	—	—	—	—	27 -	—	28 -	—	28 -	—	—	—	—	—
		Summer hours, weekly ...				—	—	—	—	—	60	—	60	—	56	—	—	—	—	—
		Winter ,, ,, ...				—	—	—	—	—	54	—	54	—	50	—	—	—	—	—
Pa ...	(d)	Summer wages..............				—	—	—	—	—	24 -	—	26 -	—	28 -	—	—	—	'73.	'74.
		Winter ,, ...				—	—	—	—	—	24 -	—	26 -	—	28 -	—	—	—	(e) 7d.	7½d.
		Summer hours, weekly ...				—	—	—	—	—	60	—	60	—	58	—	—	—	per	hour
		Winter ,, ,, ...				—	—	—	—	—	53	—	53	—	53½	—	—	—	—	—
L		(Bricklayer's)		(c)	—	—	—	—	—	—	—	—	—	17 -	—	18 -	—	—	—	20 5
				(d)	Summer			—	—	—	18 -	—	18 -	—	21 -	—	—	—	—	—
					Winter			—	—	—	18 -	—	18 -	—	18 -	—	—	—	—	—
		(Mason's)............		(c)	—	—	—	—	—	—	—	—	—	17 -	—	18 -	—	—	—	20 5
				(d)	Summer			—	—	—	17 -	—	18 -	—	18 -	—	—	—	—	—
					Winter			—	—	—	17 -	—	17 -	—	17 -	—	—	—	—	—
					—	—	—													

From (*a*), Porter's "Progress of the Nation"; (*b*), Manchester Statistical Society, Mr. Montgomery; (*c*), Mr. G. Lord's Union Documents, London School of Economics; (*f*), hourly rates.

Since 1885, sources the same as in the other tables.

Figures printed thus, 30 6, from Trade Union sources; figures thus, 28 6, from other sources.

Note.—In the *Quarterly Review* of 1859 it is stated that bricklayers' wages rose from 3*s*. a week shortly before

In Brassey's *Work and Wages* it is stated that wages in Manchester rose from 24*s*. to 27*s*. in 1837 for 59½ hours'

Summer Wages. MANCHESTER.

'77.	'80.	'83.	'84.	'85-89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	*s. d*	*s. d.*	*s. d*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
—	—	—	—												
—	—	—	36 -	8*d.*	8½*d.*	—	—	—	—	9*d.*	—	—	—	9½*d.*	—(*f*)
38 7	—	36 4	—												
36 10	36 4	36 4	—	36 4	36 10	No change.				37 1	No change.			39 2	39 2
—	31 4	31 4	—	31 4	33 4					35 3				37 3	37 3
52	54½	54½	—	54½	52½					49½				49½	49½
—	47	47	—	47	47					47				47	47
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—												
—	—	—	32 -	8*d.*	8½*d.*	—	9*d.*, 8½*d.*	—	—	9*d.*	—	—	9½*d.*	—	—(*f*)
37 1	—	32 8	—												
36 9	33 -	33 -	33 -	33 -	35 1	35 1	37 1		35 1	37 1	37 1	37 1	39 2	39 2	39 2
—	26 8	29 4	29 4	29 4	29 5 or	31 2	31 1	or	33 4	31 1	31 1	31 1	33 -	33 -	33 -
49	49½	49½	49½	49½	49½	49½	49½		49½	49½	49½	49½	49½	49½	49½
—	40	44	44	44	41½	44	41½		47	41½	41½	41½	41½	41½	44½
—	—	—	—												
—	—	—	36 -	8½*d.*	—	9*d.*	—	—	9*d.*	—	10*d.*	—	—	—	—(*f*)
43 1	—	38 7	—												
45 -	38 7	38 7	—	38 7	38 7	40 10	No change.		43 1	43 1	45 5		No change.		
—	33 4	29 5	—	29 5	29 5	31 1			33 -	33 -	34 9				
54	54½	54½	—	54½	54½	54½			54½	54½	54½				
—	47	41½	—	41½ or 47	41½	41½			41½	41½	41½				
36 10	36 4	36 4	—	36 4	36 4	38 7	No change.			No change.		40 10	No change.		
—	—	—	—	—	—	32 11						34 10			
52	54½	54½	—	54½	54½	54½						54½			
—	—	—	—	—	—	46½						46½			
				8*d.*	—	8½*d.*						9*d*			(*f*)
38 -	—	36 4	—	8*d.*	—	—	8½*d.*	—	—	9*d.*	—	—	—	—	9½*d.* (*f*)
40 10	35 9	36 4	—	34 8	No change.		36 10	No change.		39 -		No change.			41 2
—	32 5	31 4	—	31 4			33 4			35 3					37 3
49	52	52½	—	52			52			52					52
—	47	47	—	47			47			47					47
36 10	36 4	36 4	—	36 4	36 10	No change.		No change.		8¼*d.* 35 9	37 1	No change.			39 2
—	31 4	31 4	—	31 4	53 4					9*d.* 35 3	35 3				37 3
52	54½	54½	—	54½	52					52	49½				49½
—	47	47	—	47	47					47	47				47
				8*d.*	8½*d.*						9*d.*				9½*d.* (*f*)
34 10	30 8	31 9	—	31 9	No change.			33 7	No change.	34 8	No change.		36 10	No change.	
—	26 4	27 5	—	27 5				24 9		25 6			27 1		
54	54½	54½	—	54½				52		52			52		
—	47	47	—	47				38¼		38¼			38¼		
				7*d.*				7¾*d.*		8*d.*			8½*d.*		(*f*)
23 10	—	25 -	—	5½*d.*	—	—	6*d.*	—	—	—	7*d.*	—	—	—	—(*f*)
24 9	23 10	24 4	—	25 -	25 -	25 -	27 3	27 3	27 3	27 3	31 9	31 9	31 9	31 9	31 9
—	20 7	18 7	—	19 -	19 -	19 -	20 9	20 9	20 9	20 9	24 2	24 2	24 2	24 2	24 2
22 8	—	20 5	—	—	—	—	—	—	—	—	—	—	—	—	—
24 9	21 8	22 2	—	20 8	—	22 8	—	24 9	—	—	—	—	—	—	—
—	17 6	19 9	—	18 4	—	18 4	—	20 9	—	—	—	—	—	—	—

evidence to Commission on Depression, 1886; (*d*), Return of Wages, 1830-86 (C–5172); (*e*), Webb Collection of Trade

1833, and that good hands obtained 35*s.* a week in summer.
work, and were at 33*s.* for 55 hours' work in 1869: he refers presumably to the building trades.

Building Trades. Weekly Summer Wages. ENGLAND—*Contd.*

Years	....	1860.	'61.	'64.	'65.	'69.	'70.	'77.	'80.	'83.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Alderley Edge	C.	—	—	28 -	—	28 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	30 -	30 -	30 -	30 -	30 -	30 -	30 -	31 9	31 9	31 9	31 9	31 9	—	—	34 1	36 4
Aldershot	B.	—	30 -	—	—	—	—	—	—	—	—	—	—	—	—	—	32 4½	34 8	34 8	34 8	34 8	34 8	34 8	34 8	34 8	34 8
Altrincham ...	C.	—	—	28 -	—	32 -	—	—	—	—	—	—	36 4	36 4	36 4	36 4	36 10	36 10	36 10	36 10	37 1	37 1	37 1	37 1	39 2	39 2
		—	—	—	—	—	—	—	—	—	34 1	34 1	34 1	34 1	32 10	35 2	35 2	35 2	35 2	35 2	36 10	36 10	—	—	—	—
Barrow	C.	—	—	—	—	—	—	—	—	—	—	—	32 7	32 7	32 7	33 9	33 9	33 9	33 9	33 9	33 9	33 9	37 1	37 1	39 5	39 5
		—	—	—	—	—	—	—	—	—	32 7	—	—	—	—	—	33 9	—	33 9	—	—	—	—	—	—	—
Blackpool	C.	—	—	—	—	—	—	—	—	—	—	—	30 11	30 11	30 11	30 11	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	35 1	37 3
Bradford (Yorks)	C.	—	—	—	—	—	—	—	—	—	—	—	28 10	28 10	28 10	30 11	30 11	30 11	32 -	32 -	32 -	33 -	33 -	35 1	35 1	35 1
		—	—	—	—	—	—	33 -	26 10	25 9	28 10	28 10	28 10	28 10	28 10	30 11	30 11	30 11	32 -	32 -	32 -	32 -	—	—	—	—
	M.	—	—	—	—	—	—	—	—	28 10	—	—	33 -	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	35 1	35 1	36 -	36 -	36 -
		—	—	—	—	—	—	35 1	28 10	27 10	30 11	30 11	33 -	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	35 1	—	—	—	—
	B.	—	—	—	—	—	—	—	—	28 10	—	—	—	—	—	—	—	33 -	35 1	35 1	35 1	35 1	35 1	36 -	36 -	36 -
		—	—	—	—	—	—	35 1	28 10	27 10	30 11	30 11	33 -	33 -	33 -	33 -	33 -	33 -	35 1	35 1	35 1	35 1	—	—	—	—
	L.	—	—	—	—	—	—	24 9	20 7	19 7	19 7	19 7	19 7	19 7	21 8	22 8	22 8	22 8	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9
Brighton	C.	—	—	—	—	—	—	—	—	—	—	—	35 4	35 4	35 4	35 4	35 4	35 4	37 8	37 8	37 8	37 8	37 8	37 8	37 8	37 8
		—	—	—	—	—	—	35 4	—	—	37 2	37 2	35 11	35 11	35 11	35 11	35 11	39 9	39 9	37 2	37 2	37 2	—	—	—	—
	M.*	—	—	—	—	—	—	40 -	40 -	40 -	40 -	40 -	40 -	40 -	40 -	40 -	40 -	37 8	37 8	37 8	37 8	37 8	37 8	41 8	41 8	41 8
		—	—	—	—	—	—	40 -	—	—	35 10	41 -	41 -	41 -	41 -	41 -	41 -	41 -	41 -	41 10	41 10	41 10	—	—	—	—
	B.	—	27 -	—	—	—	—	—	—	—	—	—	32 11	32 11	32 11	32 11	35 4	35 4	37 8	37 8	37 8	37 8	37 8	37 8	37 8	37 8
		—	—	—	—	—	—	37 8	—	—	35 11	35 11	33 4	33 4	33 4	33 4	33 4	38 6	38 5	37 2	37 2	37 2	—	—	—	—
	L.	—	—	—	—	—	—	23 6	—	—	23 1	23 1	23 1	23 1	23 1	23 1	23 1	25 7	25 7	25 2	25 2	25 2	25 2	25 2	25 2	25 2
Cardiff	C.	—	—	—	—	31 3 in '67.	33 6	34 9 in '78.	32 9 from '79 to '85				33 9	33 9	33 9	36 -	36 -	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	40 6
		—	—	—	—	—	—	—	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 -	36 -	36 -	38 3	38 3	38 3	38 3	—	—	—	—
	M.	28 6	—	—	—	—	—	—	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 -	36 -	39 -	38 3	38 3	38 3	38 3	38 3	38 3	38 3	40 6
		—	—	—	—	—	—	—	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 -	36 -	36 -	38 3	38 3	38 3	38 3	—	—	—	—
	B.	—	—	—	—	—	—	—	33 9	—	—	—	33 9	33 9	33 9	36 -	36 -	36 -	38 3	38 3	38 3	38 3	38 3	38 3	40 6	40 6
		—	—	—	—	—	—	—	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 -	36 -	36 -	38 3	38 3	38 3	38 3	—	—	—	—
	Pa.	—	—	—	—	—	—	—	24 9?	—	—	29 3?	—	—	—	31 6	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 -
		—	—	—	—	—	—	—	31 6	30 4	30 4	30 4	30 4	30 4	30 4	30 4	30 4	31 6	33 9	33 9	33 9	33 9	—	—	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 -	—	—	—	—	—	—	—	22 6
		—	—	—	—	—	—	—	20 3	20 3	20 3	20 3	20 3	20 3	20 3	20 3	24 9	27 -	24 9	24 9	24 9	24 9	24 9	24 9	24 9	24 9
Cheadle.........	C.	—	—	25 -	—	29 -	—	—	—	—	—	—	—	—	—	—	—	—	—	34 5	32 11	—	—	—	—	35 4
		—	—	—	—	—	—	—	—	—	34 1	31 9	31 9	31 9	31 9	31 9	31 9	31 9	31 9	31 9	31 9	31 9	—	—	—	—
Chester.........	C.	—	—	26 -	—	30 -	—	—	—	—	—	—	34 1	34 1	34 1	34 1	34 1	34 1	34 1	36 4	36 4	36 4	36 4	36 4	38 7	38 7
		—	—	—	—	—	—	—	—	—	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	34 1	—	—	—	—
Chorley.........	C.	—	—	—	26 -	—	—	—	—	—	34 1	—	—	—	34 1	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	38 7	38 7	38 7
		—	—	—	—	—	—	—	—	—	34 1	34 1	38 7	34 1	34 1	34 1	34 1	34 1	34 1	36 4	36 4	36 4	—	—	—	—
Crewe	C.	—	—	23 -	—	26 -	—	—	—	—	—	—	29 9	29 9	29 9	30 1	30 1	30 1	30 1	30 1	30 1	31 2	32 4	—	—	31 6
		—	—	—	—	—	—	—	—	—	34 8	34 8	34 8	—	—	30 1	30 1	30 1	30 1	30 1	30 1	30 1	—	—	—	—
Dewsbury......	C.	—	—	24 -	—	25 -	—	—	—	—	—	—	28 2	30 4	30 4	30 4	30 4	30 4	30 4	30 4	30 4	30 4	32 6	32 6	33 -	33 -

For notes see pp. 308—9.

* Hours of labour doubtful in several years.

Building Trades. Weekly Summer Wages. ENGLAND—*Contd.*

Years	....	1860.	'61.	'64.	'65.	'69.	'70.	'77.	'80.	'83.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d	s. d	s. d.
Dover	B.	—	30 -	—	—	—	—	—	—	—	—	—	35 4	35 4	35 4	35 4	35 4	35 4	35 4	—	—	—	—	—	—	37 8
Eccles	C.	—	—	28 -	—	32 -	—	—	—	—	—	—	36 4	36 4	36 4	36 4	35 9	—	—	—	—	—	—	—	—	39 2
		—	—	—	—	—	—	—	—	—	—	32 11	—	—	—	—	32 11	—	32 11	—	—	—	—	—	—	—
Guildford	B.	—	27 -	—	—	—	—	—	—	—	—	—	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	35 4	35 4	35 4	35 4	35 -4
		—	—	—	—	—	—	—	—	—	34 2	34 2	34 2	34 2	34 2	34 2	34 2	34 2	34 2	34 2	34 2	34 2	—	—	—	—
Hastings	B.	—	27 - to 30 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35 4	37 8	37 8	37 8
Ipswich............	C.	—	—	—	21 -	—	—	—	—	—	25 11	—	25 11	25 11	25 11	28 3	30 7	30 7	30 7	30 7	30 7	32 11	32 11	32 11	32 11	32 11
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 7	30 7	30 7	30 7	—	—	—	—
Leamington	B.	—	27 -	—	—	—	—	—	—	—	—	—	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	37 8	37 8	37 8
Leicester	C.	—	—	25 -	'66. —	29 -	—	—	—	—	—	—	35 4	35 4	35 4	35 4	37 8	37 8	37 8	36 -	40 -	40 -	40 -	39 9	39 9	39 9
		—	—	—	29 6	—	—	37 8	35 4	35 4	35 4	35 4	35 4	35 4	35 4	35 4	37 8	37 8	37 8	36 -	40 -	40 -	—	—	—	—
	M.	—	—	—	—	—	—	—	—	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	38 3	39 9	39 9	39 9	39 9
		—	—	—	34 -	—	—	37 10	40 -	40 -	—	40 -	40 -	40 -	40 -	40 -	38 3	38 3	38 3	37 11	37 11	37 11	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	35 4	35 4	35 4	35 4	37 8	37 8	37 8	37 8	40 -	40 -	40 -	42 4	42 4	42 4
		—	—	—	30 5	—	—	37 8	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9	37 8	37 8	37 8	37 8	40 -	40 -	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32 11	35 4	35 4	35 4	35 4	35 4	37 8	37 8	37 8	37 8	37 8
		—	—	—	27 -	—	—	32 4	35 -	—	32 8	32 8	32 8	—	—	—	35 4	35 4	35 4	35 4	35 4	35 4	—	—	—	—
	L.	—	—	—	19 6	—	—	25 11	25 11	23 7	22 6	22 6	22 6	21 4	21 4	21 4	25 11	25 11	25 11	25 11	27 -	27 -	27 -	28 3	29 4	30 7
Oxford	B.	—	24 -	—	—	—	—	—	—	—	—	—	—	—	—	—	31 6	33 9	31 6	33 5	—	—	—	—	—	35 8
		—	—	—	—	—	—	33 9	—	—	31 6	31 6	31 6	31 6	31 6	31 6	31 6	36 4	31 6	33 5	—	—	—	—	—	—
Padiham	C.	—	—	24 -	—	27 -	—	—	—	—	—	—	—	—	—	—	30 2	30 2	30 2	—	—	—	—	—	—	34 -
Plymouth	C.	—	—	—	'65. 24 -	—	24 - in '73.	29 3 in '78.	—	—	29 3	—	29 3	29 3	29 3	29 3	31 6	31 6	33 9	33 9	33 9	33 9	35 4	35 4	35 4	35 4
		—	—	—	—	—	—	—	—	—	28 3	28 3	28 3	28 3	28 3	28 3	31 6	31 6	31 6	33 9	—	—	—	—	—	—
Retford	C.	—	—	—	22 0	—	—	—	—	—	28 3	—	—	—	—	—	—	—	—	28 3	30 7	—	—	—	—	32 11
Rossendale	C.	—	—	25 -	—	28 1	—	—	—	—	—	—	31 6	31 6	31 6	31 6	31 6	32 7	33 9	—	—	—	—	—	—	—
Shepton Mallet	M.	—	—	—	23 -	—	—	—	—	—	26 -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Shifnal	C.	—	—	—	22 -	—	—	—	—	27 3	or 28 -	—	28 3	28 3	28 3	28 3	28 3	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11	32 11
Shipley	C.	25 -	—	—	—	—	30 -	'75. 33 -	25 -	—	28 -	—	28 10	30 11	—	30 11	30 11	30 11	32 -	—	—	—	—	—	—	35 1
Shrewsbury	C.	—	—	—	22 -	—	—	—	—	—	28 6	—	28 3	28 3	28 3	30 7	30 7	32 11	32 11	32 11	32 11	32 11	37 8	37 8	37 8	37 8
Southport	C.	—	—	28 -	—	31 -	—	—	—	—	—	—	30 11	30 11	30 11	33 -	33 -	33 -	33 -	34 -	34 -	34 -	35 1	35 1	35 1	37 3
		—	—	—	—	—	—	—	—	—	—	30 11	—	—	—	—	33 -	—	33 -	—	—	—	—	—	—	—
Stourbridge	C.	—	—	24 -	—	27 -	—	—	—	—	—	—	30 7	30 7	30 7	32 11	32 11	32 11	32 11	—	32 11	35 4	35 4	37 8	37 8	37 8

For notes see pp. 308—9.

Building Trades. Weekly Summer Wages. ENGLAND—*Contd.*

Years	......	1860.	'61.	'64.	'65.	'69.	'70.	'77.	'80.	'83.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Stratford-on-Avon	C.	—	—	—	28 – to 30 –	—	—	—	—	—	32 – to 33 4	—	30 7	30 7	30 7	30 7	30 7	32 11	30 7	—	—	—	—	—	—	32 11
Ulverston	C.	—	—	22 –	—	26 –	—	—	—	—	—	—	30 –	30 –	30 –	30 –	31 9	31 9	31 9	31 9	31 9	31 9	34 –	—	—	36 4
Warrington	C.	—	—	26 –	—	30 –	—	—	—	—	—	—	33 3	33 3	33 3	33 3	36 8	36 8	36 8	37 6	37 6	37 6	37 6	39 9	39 9	39 9
		—	—	—	—	—	—	35 4	32 –	33 3	33 3	33 3	33 3	33 3	33 3	33 3	36 8	36 8	36 8	37 6	37 6	37 6	—	—	—	—
	M.	—	—	—	—	—	—	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 1	37 6	39 9	39 9	39 9	39 9	39 9	39 9	39 9
		—	—	—	—	—	—	36 9	36 –	36 8	36 8	36 8	36 8	36 8	36 8	36 8	38 7	38 7	38 7	38 7	38 7	38 7	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	36 8	36 8	36 8	36 8	38 11	38 11	38 11	38 11	39 9	39 9	39 9	42 –	42 –	42 –
		—	—	—	—	—	—	39 9	36 –	36 8	36 8	36 8	36 8	36 8	36 8	36 8	38 11	38 11	38 11	38 7	39 9	39 9	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34 1	36 4	36 4	36 4
		—	—	—	—	—	—	35 –	30 –	32 1	32 1	—	—	—	—	—	32 1	—	32 1	34 1	35 2	35 2	—	—	—	—
	L.	—	—	—	—	—	—	21 –	19 –	24 1	25 2	25 2	25 2	25 2	25 2	25 2	27 6	27 6	27 6	28 8	28 5	28 5	28 5	28 5	28 5	28 5
Wednesbury	B.	—	—	—	23 6	—	—	—	—	—	31 6	—	31 6	33 9	33 9	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –
Whitworth.........	M.	—	—	—	30 –	—	—	—	—	—	32 4	—	33 –	33 –	33 –	33 –	33 –	—	—	—	—	—	—	—	—	—
Wolverhampton ..	C.	—	—	26 –	—	30 7	—	—	—	—	—	—	33 9	33 9	33 9	36 –	36 –	36 –	36 –	36 –	36 –	36 –	38 3	38 3	38 3	38 3
		—	—	—	—	—	—	36 –	33 9	34 1	—	34 1	34 1	34 1	34 1	34 1	36 4	36 4	36 4	36 4	36 4	36 4	—	—	—	—
	M.	—	—	—	—	—	—	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4	38 3	38 3	38 3	38 3	38 3	40 6	40 6	40 6	40 6
		—	—	—	—	—	—	38 3	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	38 3	38 3	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	33 9	33 9	33 9	36 –	36 –	36 –	36 –	36 –	36 –	36 –	38 3	38 3	38 3	38 3
		—	—	—	—	—	—	36 –	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 –	36 –	36 –	36 –	36 –	36 –	36 –	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	31 6	31 6	31 6	31 6	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9	33 9
		—	—	—	—	—	—	33 9	33 9	31 6	31 6	31 6	31 6	31 6	31 6	31 6	32 8	32 8	32 8	33 9	33 9	33 9	—	—	—	—
	L.	—	—	—	--	—	—	24 9	20 3	20 3	20 3	20 3	20 3	20 3	20 3	20 3	20 3	20 3	22 6	22 6	22 6	24 9	24 9	24 9	27 –	27 –
Wrexham	C.	—	—	23 –	—	24 –	—	—	—	—	—	—	27 9	30 –	30 1	30 1	30 1	30 1	30 1	30 1	30 1	31 9	31 9	35 1	35 1	35 1
Over Darwen......	C.	—	—	26 –	—	28 –	—	—	—	—	—	—	30 7	30 7	32 8	32 8	32 8	32 8	32 8	—	—	—	—	—	—	—
Runcorn............	C.	—	28 – from '66 to '72, 30 – from '72 to '75, 33 6 from '75 to '85									—	33 6	33 6	33 6	33 6	33 6	33 6	36 4	36 4	36 4	36 4	36 4	36 4	36 4	36 4
		—	—	—	—	—	—	—	—	—	33 6	33 6	33 6	33 6	33 6	33 6	33 6	33 6	36 4	36 4	36 4	36 4	—	—	—	—
Wigan..............	C.	—	—	26 –	—	29 9	36- in '76-7		—	—	33 6	—	32 11	32 11	32 11	32 11	36 4	36 4	36 4	36 4	36 4	36 4	38 7	38 7	40 10	40 10
		—	—	—	—	—	—	—	—	—	—	32 11	32 11	32 11	32 11	32 11	36 4	36 4	36 4	36 4	36 4	36 4	—	—	—	—
Harrogate	C.	—	—	—	30 7 '65 to '75, 31 3 till '78, 27 1 from 1878.							—	27 1	27 1	27 1	31 3	31 3	31 3	31 3	31 3	33 –	33 –	33 –	33 –	35 1	37 3
Margate	C.	—	—	—	Varied from 29 – to 37 8.						35 3 '79-'86	—	37 8	37 8	37 8	35 4	35 4	35 4	37 8	37 8	—	—	—	—	—	40 –
		1865	'68	'70	'73	'74	'75	'76	'77																	
Rugby..............	C.	22 6	25 6	27 –	28 3	29 5	31 2	33 –	35 4	—	33 –	—	33 –	33 –	33 –	33 –	33 –	35 4	35 4	35 4	35 4	35 4	35 4	37 8	37 8	37 8
		—	—	—	—	—	—	—	—	—	—	33 –	33 –	33 –	33 –	33 –	33 –	33 –	35 4	35 4	35 4	35 4	—	—	—	—

For notes see pp. 308—9.

Erratum.

In the paper on the "Relations between the Accuracy of an Average and that of its constituent parts" in the *Journal* of 1897, a mistake was inadvertently made in all those cases where the error of the difference between two quantities was expressed in terms of the error of one of the quantities. Thus, on p. 863, if E_2 is typical of the quantities $\epsilon_1, \epsilon_2, \ldots\ldots$, then $E_2 \times \sqrt{2}$ is typical of such quantities as $(\epsilon_s - \epsilon_t)$, *not* $\frac{E_2}{\sqrt{2}}$ as there given. Corresponding corrections can easily be made throughout pp. 863—66. The general argument is not affected.

A. L. B.

II.—*The Statistics of the World's Foreign Commerce.*

By VILHELM SCHOU.

THE foreign trade of every country is that part of its economy which is regarded with most attention, probably because on this subject the most exhaustive and complete particulars are obtainable. Statistics of exports and imports are of ancient origin and are collected in all civilised countries. It is possible that this may have led to an over-estimate of the significance of foreign trade, and it would serve a desirable object to discover, as far as possible, its real importance to the aggregated income of a country. The home trade is certainly often under-estimated, and from this perhaps it follows that the development of the internal production and exchange is not watched so attentively as is the foreign trade. A proof of this may be found in the small amount of attention which many people pay to the effects of natural protection in those trades where no legal protection is afforded. This natural protection shows its effects directly in the international exchanges, where, however, a still more powerful and effective natural protection is to be found. The building industry is a great example of this. There the employers and employed have no foreign competition. They are therefore liable to the well-known danger of extravagance in the cost of production, and this fault may easily infect other industries. It would not be difficult to find cases where the industries of a country endeavour to remain superior in the competition with foreign countries, but, little by little, they feel their ability to do so weakened by an invisible power, and only upon a closer examination discover that it emanates from that part of their home industries which are under a natural protection and are not therefore affected by the foreign competition. But, on the other hand, the wealth created by the internal production and exchange is also often under-estimated.

It is with a recognition of the possibilty of over-estimating the importance of the foreign trade, that I venture to make some remarks upon the statistics of exports and imports, not as an additional contribution to the results of the many excellent researches in this field, but only by their aid to consider a particular case, namely, the statistics of the word's external commerce.

It is generally attempted to obtain some idea of the total foreign trade of all countries by collecting the statistics of their exports and imports. Naturally the figures obtained in this way are liable to most of the errors that appear in the original data. But in so vast a field as that of the aggregated foreign commerce of the world many of these errors compensate each other, and even a very great error may be completely neutralised. By comparing the statistics of two countries, it will often be found that the quantity of a commodity stated as having been exported by one country to another, does not tally with the statistics of the imports of the other country, and the discrepancy may often be so great as to furnish one of the most powerful weapons against this branch of the statistics. But in dealing with the commerce of the world the exported goods must be exactly the same as the imported. Here, therefore, if the statistics are accurate the quantity of exported goods should balance the quantity of imported goods. If this be the case, that the quantities balance and yet the values of the exports and imports do not balance, it must be owing to the methods by which the quantities are valued. It is otherwise with the individual countries, where the balance of trade is also affected by numerous causes resulting from the fact that perhaps a country does not repay the whole of its imports by the goods that it exports, or does not get the whole of its exports repaid by foreign goods.

On the difference between the value of exports and imports in the world's commerce, Sir Robert Giffen has said:[1] "a difference like this can only be due to a common cause, and that cause obviously is the cost of conveyance; the imports being valued at the place of arrival, include in all the accounts the cost of conveyance, the exports being valued at the place of departure, do not include that cost." These expenses are chiefly for freight, but they also include commissions and insurance, and, in most countries, the importer's profit and all his expenses of importation which must be covered by the sale of the imported goods wholesale.

The cardinal requirement of trade statistics in this respect is, that in the commerce of the world the exports and imports should consist of the same goods. This may be tested by examining whether the value of the imports varies in the same way as the value of the exports from one year to another. If the one rises as much per cent. as the other, it must also include the same quantity of goods; the changes in the prices which may take place during the conveyance are of no importance. This is investigated in Appendix Table A, where there appears a close agreement in the development of the value of the exports and imports. This becomes still more apparent on taking the average for several years.

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[1] *Journal of the Statistical Society,* vol. xlv, p. 202, June, 1882.

All the goods which are entered as exports in the statistics of various countries are thus found entered as imports in the statistics of other countries, although they may have reached their ultimate destination by many a roundabout way.

The table also shows that trade statistics do not become inaccurate because the cost of conveyance is included in the value of the imports. Even if this cost was known for every country, and subtracted from the value of the imports, so that goods were compared with goods alone, the result of this comparison would remain the same. The value of the imports would rise in the same way as before, and the only difference would be that it would be equally with the value of the exports. Such an analysis on the part of each individual country would be of great value, as it would in this way indicate the balance of the quantity of exchanged goods, and not alone the balance of the value of the exchanged goods. But with respect to the accuracy of the statistics nothing would be gained thereby. Statistics are not rendered inaccurate by the inclusion of these charges, although they do not analyse them.

But although the cost of conveyance does not affect the agreement I have mentioned, this does not mean that this cost develops exactly as the value of the imports and exports. It comprises about 13 per cent. of the value of the imports, and it may have its own fluctuations, which, although they may not differ very greatly from those of the others, may differ without giving much indication of their action in the value of the imports, which are eight times as great. Table A shows that the cost of conveyance is subject to such fluctuations, and these are of so much greater interest now, since the cost amounts to about 250—270 million £ per annum. Especially at the commencement of the seventies and during the nineties the cost of conveyance rose more than the value of the commodities. This rise may be caused either by the fact of freights, &c., falling less than the prices of commodities, or by the increase in the distances of transport. It may be assumed that the latter reason is the more important of the two, and that this is on account of the increase in ocean traffic. When the conveyance is performed overland, the importation and exportation goes on at the same place, and if this influences the price-calculations of the statistics, a greater transport by sea would also increase the percentage of the value of the imports deducted for cost of conveyance (*e.g.*, the Suez Canal, 1869).

Whatever influence may be ascribed to errors and to the different methods of the various countries, or to changes in methods and practices, it will be apparent from what has already been said that this does not prevent, in the statistics of the foreign commerce of the world, a comparison between various years and periods, and also that the statistics of the individual countries are accurate in no small degree, even if in many cases a figure cannot be compared with a corresponding figure for other countries. It must not be overlooked, however, that of the many countries that take part in the universal exchange of goods, two-thirds of this interchange is carried on by nine, viz., England, Germany, France, the United States, Holland, Belgium, Russia, Austria and Hungary, and British India. The statistics of these States therefore exert a paramount influence, and for some of these countries and for the lesser States there may be great defects in the statistics, although they have no visible influence on the final result, and therefore do not come to light in a comparison such as has here been made. But, on the other hand, the position which the statistics of a country occupy compared with the leading States, will cause the main result to be of importance for this country.

I have spoken above of the balance of the quantity of goods exchanged in the foreign trade. If this balance could be obtained for every country, it would certainly show us quite a different picture; we should see that other countries than those which we now think of have an excess of imports or exports, and it would be seen that many more countries than is believed have an excess of exports, and it would furnish an explanation to many people who even now do not understand why most countries should have an excess of imports.

It is probable that, for example, Sweden, Finland, Belgium, France, Italy, Roumania, and perhaps Germany, would show an excess of exports, whilst at present the statistics indicate the opposite, and the excess of exports of the other continents would be indicated by a much greater amount than at present. To illustrate this by an example, I may quote from the source already mentioned, that in 1897 the figures were in million £ sterling:—

	Imports.	Exports.	Excess of Imports.	Excess of Exports.
Europe	1,430	1,089	341	—
Other continents	617	701	—	84
	2,047	1,790	257	—

The total excess of imports is 12·56 per cent. of the imports. If, as the true proportion is unknown, it is assumed that this percentage may be subtracted from both amounts of imports, the excess of imports for Europe would be 161 million £ and the excess of exports for the other continents would also be 161 million £. These figures are not correct. Upon further examination it would probably be seen that 11 per cent. should be deducted from the imports of Europe, and 16 per cent. from the imports of the other continents, thus the figures for excess of imports and exports would become 184 million £. It is improbable that the exact figures can be very far from those I have mentioned, but if they could be obtained, very interesting particulars of the invisible exports of Europe, and their fluctuation, could be gained without any confusion taking place through the two groups of countries, each within its own territory, having excess of imports or exports in their mutual trade.

In the investigation and discussion of the economical questions of the day the want of a firm basis is constantly felt. For example, in dealing with the wages of labour, if we desire to examine the status of the labourers, we cannot compare the wages of different times or countries, without knowing the prices of the articles they consume. On the part of the employer, the main question is the cost of the labour, the amount of work that can be done for a certain sum of money, now or in the past, in his own country or in the competing countries. In both cases it is a question not only of the amount of the sums of money given or received, but also of the prices and the quantities of commodities received or produced. The same is the case with productions and trade taken on the whole, with all that concerns prosperity and the growth and distribution of wealth. But we must not overlook the fact that excellent work is being done by the most practical methods to meet these deficiencies in many directions, where there is hope of meeting them in a good and satisfactory manner. It is particularly with respect to the fluctuation of prices that much has been done to clear that which, formerly, was vague and indistinct. These investigations of prices, both of the leading commodities and of the general price level, commenced in England, and have there, in a most able manner, been brought into connection with investigations of the variation of the quantities of commodities and the general level of the aggregated quantities. Mr. Sauerbeck has not only produced his highly-esteemed index numbers of the movements of prices, but has also, to a certain degree, estimated the articles in proportion to their importance. But Mr. Sauerbeck has also, for the purpose of examining the accuracy of his index numbers, made calculations of the quantity of goods produced and exchanged. The *Economist* again shows every year how England's foreign trade has varied in price and value and quantities. The index numbers of this journal, together with those of Mr. Sauerbeck and Mr. Soetbeer, of Hamburg, are our most valuable sources of knowledge of the movements of the prices of the chief commodities and the purchasing power of money.

All these investigations—which, however, do not end the list—apparently invite an, as far as possible, accurate calculation of the variation of the quantity of goods. It is the quantity and not the price of goods, Mr. Sauerbeck says, that keeps people employed, and it may be added, feeds and supports them. Such a calculation could be made in the same manner as that in regard to prices, by taking the quantities of the chief commodities in each year, partly those of which the quantities produced can be obtained, partly the exchanged quantities, choosing a standard period in which the average quantity of each commodity should be taken as 100, and calculating the index numbers for the other years as percentages of 100, and a grand total can be made for each year in the same manner as for the prices, without taking into account that the goods are sometimes measured by weight and sometimes by capacity or other denomination. As with the prices, not only the general average but also the index numbers of the chief commodities would be of great importance, and the latter would facilitate the investigation of which articles have contributed to increase or decrease the total quantity of goods exchanged or produced in each individual year, and particularly in the various periods of activity and depression. At the same time this would contribute to an examination of the consumption during the various periods.

But that the results arrived at, both with regard to prices and goods, may not only be turned to the best possible account, but may also carry authority with them, it will probably be necessary to extend the investigations as far as possible. Although the index numbers at present existing are good and fairly adequate, yet they are open to criticism because they do not give a correct idea of the general price level, as they do not estimate the full importance of the commodities. This has hardly any significance for the figures of British trade, where it has been found that a complete estimation of their importance gives nearly the same index numbers.

But for the other countries and for the whole world this is not sufficient. Moreover, every country has its own price level, and even separate ones for the imports and the exports; and with these it is important to be acquainted. For all the other countries one could calculate in the same way as is done for England the value of the imports and exports at the prices of the past year so as to show "to what extent the recorded movements in values have been due to variations in the volume of the year's trade, and how far they have been caused by variations in prices." These calculations could be made for a number of previous years, so that all these movements would be recorded for the last twenty or thirty years.

In this manner not only the existing index numbers of the prices, and the proposed numbers for the quantities of goods would be tested as thoroughly as possible, but much new information would be obtained with respect to the movements of these quantities and prices. The statistics of the foreign commerce of the world show that the total result will form a very satisfactory whole. There is another point, viz.: that an important part is played by many other prices besides those mentioned, especially by the prices of the retail trade and payments as wages, rent, &c. But dealing here only with the goods in the international trade, and the quantities produced, as far as they can be obtained, all the information that is possible from these data may be gained by the above-mentioned method.

It may be urged, however, that a constant change is ever taking place in the importance of the different articles. But it would be possible to form an idea of the influence of these changes for the foreign trade, by using both of the methods suggested by Professor F. Y. Edgeworth in the discussion on Mr. Sauerbeck's paper on "Prices of Commodities," read before the Royal Statistical Society on 18th April, 1893 (*Journal*, vol. lvi, June, 1893, p. 248); Professor Edgeworth said that, "The 'importance' of articles might depend on various circumstances. It might depend on their value at the initial (or standard) period; or again at the particular period considered, *e.g.*, the current year. He would ask whether theoretically the index numbers obtained by the following methods were not equally good: (1) Comparing the initial quantities, at the initial prices, with the same quantities at prices of the particular year; (2) By comparing the quantities of the particular year at the initial prices, with the same quantities at the prices of the particular year. Theoretically, one method was as good as the other, perhaps ideally a mixture of the two would be the best."

By using both methods two results will be obtained, and the difference between the two will show whether in the total bulk of goods exchanged the importance of the special articles has altered. If the difference is not great, the average of the two figures obtained will probably give a correct result. If there is a great difference, the comparison will be less reliable, and will necessitate further investigations; but to be made aware of this necessity is perhaps not one of the least of the advantages gained. The two calculations, involving the double amount of work, will, however, gain another advantage if the value is not calculated at the prices of the past year, but if, as Professor Edgeworth suggests, a standard period is chosen and its prices and quantities made use of at the annual calculations. The individual years may then be compared with each other directly, and not only the two consecutive years. By choosing a fairly long and good standard period, the changes in the composition of the bulk of commodities will become of lessened importance.

Referring to what has been said about the importance of becoming as much as possible acquainted with the movements of the quantities of goods, it may be added that the goods themselves are things more solid and definite than their prices and values. The commodities are always the same, wherever and in however great quantities they are sold, whilst their price and value vary according to whether they are conveyed to different markets in the same country, or whether they are sold wholesale or retail. It may, however, be mentioned that their importance to trade and production and consumption is altered when they are, in an unusual manner, stored or taken from stores instead of passing direct from producer to consumer.

The foreign trade of all countries is itself of great importance, and at the same time it reflects the movements of the rest of the economical life, the production and consumption of which it supplies with so many goods. We will therefore make use of the above-mentioned statistics of this trade to show how useful it would be to have as perfect a knowledge as possible of the movements of its values, prices, and quantities, and how great a drawback it is not to have sufficient data on this subject. By the aid of the existing index numbers of prices the quantities can be sketched. The exports are chosen for this purpose. The figures expressing the value of the exports of any year are simply divided by the index number of the price level of this year. This is a very imperfect method of proceeding, and the result becomes equally imperfect for the reasons already set forth. But this will show the necessity of employing much better methods. At the same time it must be acknowledged that Mr. Sauerbeck's index number of prices, which is made use of here, has been found to be accurate in respect of a trade so great and comprising so many commodities as that of England.

Appendix Table C gives the figures of the value, price level, and quantities of the world's foreign commerce during the last thirty years. The curves in the diagram are constructed from these figures, and it was also found necessary to compare the difference of the movements from year to year, partly because the curves do not indicate them sufficiently clearly, partly because the table only shows the percentage of increase or decrease with reference to the amounts of the standard period, 1876-85; but these amounts are so changed towards the end of the period, that the percentage of the yearly increase or decrease should also be calculated with reference to the nearest preceding years. These percentages are shown on the charts. It has only been possible to calculate the percentages of the yearly movements with reference to the past year; many years at the commencement of the period are unfortunately missing. The difference between the average of, for instance, the five preceding years and the past year will not exert a very great influence upon the percentages. The chart contains all the errors to an increased degree, but they nevertheless indicate the development of the state of affairs.

The connection between the quantities and the prices of the goods must be that the prices fall when the quantities increase, therefore the curve for prices is drawn in the opposite direction to the curve for quantities, descending when the latter ascends, and conversely. On the other hand, the curve for value is drawn in the same direction as that for quantity. Were the value of the goods to decrease at the same time as the quantity increased, the result would be a continual loss for the producers. However much the cost of production may have decreased, there is no doubt that the most effectual means of lowering this cost is to increase the production, and thus maintain its value in spite of falling prices. In some years the value has fallen, or only risen very little, in spite of the increase of quantity, but these have been very unfavourable years (1874-75, 1879, 1884, 1886, 1894). With the exception of these years, the curves for quantity and for value run in the same direction.

The unfavourable years are marked on the chart. The years generally known as years of activity and depression are indicated as such, but some of these may be doubtful, especially in dealing with all countries.

The increase of the quantities of goods produced is very great. Taking an average of five years it is nearly the same, but considerably less from 1888-93; in 1885 and 1893 it even appears to have decreased a little. The quantities produced should at least increase to the same degree as the increase of population, but as new territories for exports and imports have appeared, it is difficult to state the increase of population. If the population which produces and consumes the exchanged goods is considered as increasing 1 per cent. per annum, and a line drawn on the chart for "no movement" at 1 per cent. instead of at 0, the character of this chart is very much altered. It is remarkable to note how little the quantity increased in the booming years of the beginning of the seventies, and also how the following years fulfilled the expectation entertained, when the depression came, that it was, to a great degree, caused by too much capital being fixed in productive enterprises which would be reproduced later on. The later periods of good or bad trade apparently differ from this. There is on the whole apparently no great connection between the quantity of goods produced and the changing times; there are good and bad years with a considerable increase of the quantity, and likewise with a small increase. This, in addition to all the experiences of the depression which follows a period of good trade, would tend to make an estimate of its true prosperity somewhat fallacious, and this may have some connection with the influence exerted by the quantities stored, a subject upon which I will in a moment touch once more. I may here just mention that the variation of the quantities of goods from year to year is at the most 6 to 7 per cent., and that even comparatively small stores may thus exert an influence when they are emptied or filled in an unusual manner. There appears, however, on one point to be a connection between the quantities of goods and the changing times, namely, that the former always increase least, and even decrease, during the bad periods, and always in the middle of these, which here becomes a definite turning point. The good periods apparently commence to develop in a more accidental manner, so that this turning point would appear to indicate that stern necessity has had its effect in the bad periods.

An advance in prices always takes place during the good years, but falling prices may also produce activity. The years 1895 and 1896 are particularly remarkable in this respect. Generally speaking an improvement has always commenced with advancing prices. But there is hardly occasion to speak further about prices, they have been so often and excellently treated.

The value seems to be the best index of the state of the times. It rises in good, and falls in bad, periods. An exception must be made in the case of 1869-70, and especially 1877-78, which were two decidedly bad years; but the condition of affairs during these two years may also be regarded as unnatural.

Although the curves have been constructed on the method which a mathematician employs when he is about to solve a problem, and commences by assuming that he has solved it, still they should be regarded in connection with the much debated question of whether the number of mediums of exchange depends chiefly upon the quantity of gold or upon the state of credit. This question is of importance with respect to prices, and it may be stated that the mediums of exchange which are important here are only those which take part in the exchange. The absolute number of mediums of exchange cannot be measured; but this is of minor importance, it is their agency which exerts an influence upon the prices. The total value of all home and foreign exchange shows at all times the power of the purchasing means. Its movements must therefore be reflected to a high degree in so enormous an exchange as that of the international commerce of all countries.

It can hardly be wrong to consider the changes of the value of the aggregated international trade as accompanying the changes of the number of mediums of exchange. It will then be observed that the curve for the value agrees with the curve for the quantity of goods, whilst the latter, especially after the middle of the eighties, deviates greatly from the curve for prices. It is said that the monetary circulation of gold has not increased from 1871-84; the value should therefore remain unaltered; but taking an average of five years, it remains unaltered only from 1881-85 and 1886-90. During bad periods the value decreases much more than does the quantity of goods, and it anticipates the decrease of the latter. Perhaps this is because the decrease in value is the cause of the decrease in quantity. But otherwise from year to year, and through the whole period of thirty years, the value moves in the same direction as the quantity. Thus its movements are independent of the greatly varying increase of gold. The supply of gold does exert an influence, but not the greatest, upon the prices and values. It is credit which constitutes or manages the chief part of the mediums of exchange, and that part which is the most important factor in determining the prices; and it is natural that the credit and by its aid the value are closely connected with the quantity of commodities.

The mediums of exchange are strongly affected through credit by a change in the state of the market, but such an occurrence also exerts a great influence upon the quantity of goods, not only by increasing or limiting the production, but also by altering their importance in the market. Here it is that the quantities in store make their influence felt, and it might be very advantageous to investigate not only the consequences that ensue when the stores are filled in an unusual manner, but also when they are emptied in the same way. The former happens during bad periods, the latter is perhaps one of the reasons why years of great activity are possible, and why too they are followed by great depressions and *must* necessarily be so followed. If the stores—and this word is taken in its widest sense—are depleted too much, it will no longer be possible, nor of any advantage, to retain advanced prices, as the stores which are necessary for safe economical conditions have become too small and must again be collected. Stores and provisions should once more be laid up, quite independently of prices, and until this is done credit and trust draw back, and would draw still further back if it were not done, and thus prices would be regulated.

At such times the case of the whole of the trade is similar to the position of the individual merchant, who, under an advancing state of the market, first sells his stores, and then goods which he may have on order, but does not receive at the proper time, partly because others have done what he is doing, and thus the producers are unable to cope with the demand, and partly too because new investments have been made which are unproductive or slow in becoming productive; and, finally, it is in part due to the fact that consumption has greatly increased, in other words, too great a proportion of the floating capital is fixed or expended. At last a moment arrives when the unhealthiness of the development shows itself, and regulation becomes necessary.

The floating capital represents the accumulated stores or provisions, but it is not always floating in the same manner. To afford the greatest benefits it should be like a steady fertilising stream, but occasionally it freezes hard and too great a volume is piled up; at other times it becomes like quicksilver, runs into many directions, often to little purpose, and is very difficult to find and collect again, separated as it is into many very small particles, and coming into the hands of people who do not understand its real value and indispensability.

Value and quantity run in the same direction, but the latter increases most. That is natural, for increased wealth is distributed in the best manner when it disperses itself automatically by means of lower prices. During twenty years, from 1853-73, the opposite was the case; then a good distribution could not be effected till the income of individuals increased. The discovery of the best method to effect increase of incomes is a very difficult problem. It is therefore probable that it was not then effected by the best methods, and great difficulties have arisen from the fact that this regulation of incomes commenced with too great zeal at the beginning of the seventies. It has not brought real happiness, and has led to the confusion of many ideas. Even now when this necessary assessment may be thought to be completed, its nature is not recognised in many important circles, and many people fail to appreciate that only that new capital which is made by labour and economy will increase future wealth and each man's share thereof.

Prices should fall when production increases faster than population; but they cannot fall so much as the production increases, for the cost of production does not fall in the same proportion. Therefore the number of mediums of exchange should increase when the exchange increases, but more slowly. The curves run in the right direction, and if at times there is a disproportion between them they regulate themselves, though sometimes this regulation involves great disturbances. This happens when prices have been too much advanced, and finally credit draws back as in 1874-75, 1879, 1884-85, and 1892; conversely, it will step in with assistance if prices are decreased too much, as was seen to be the case both in 1880 and 1888, and during the last few years.

APPENDIX.

TABLE A.—*Statement of the Imports and Exports of the World.*

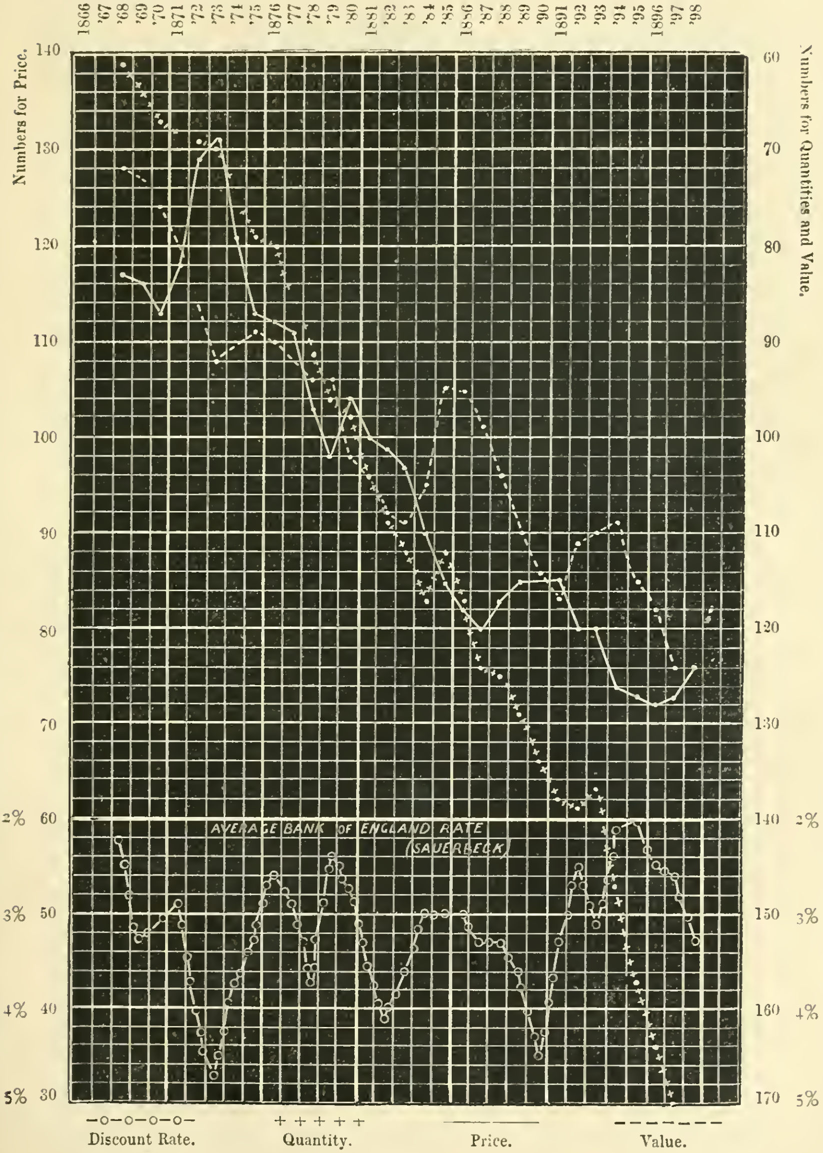
[From von Neumann Spallart's *Uebersichten der Weltwirtschaft und* Hübner's *Geographisch-statistische Tabellen.*]

[In millions of £'s, converting the mark at 1 shilling.]

	Imports.	Exports.	Excess of Imports.	Average 1876-85 = 100.			
				Imports.	Exports.	Excess of Imports.	
	£	£	£				
1867–68	1,165	1,045	120	70,1	72,2	56,3	Average of 3 years, the current, the past, and the next year.
'69–70	1,266	1,100	166	76,2	75,9	77,9	
'72–73	1,554	1,334	220	93,6	92,1	103,3	
'74–75	1,450	1,289	161	87,3	89,0	75,6	
'76........	1,493	1,296	197	89,9	89,5	92,5	
'77........	—	—	—	—	—	—	
'78........	1,508	1,359	149	90,8	93,8	70,0	
'79........	1,571	1,355	216	94,6	93,6	101,4	93
1880........	1,713	1,478	235	103,1	102,1	108,8	101
'81........	1,709	1,510	199	102,9	104,3	93,4	104
'82........	1,796	1,559	237	108,1	107,8	111,2	106
'83........	1,816	1,577	239	109,3	108,9	112,2	108
'84........	1,733	1,521	212	104,3	105,0	99,5	106
'85........	1,606	1,380	226	96,1	95,3	106,1	101
'86........	1,594	1,388	206	96,0	95,6	96,7	100
'87........	1,646	1,436	210	99,1	99,2	98,6	97
'88........	1,710	1,502	208	103,0	103,7	97,6	105
'89........	1,851	1,596	255	111,4	110,2	119,7	115
1890........	1,916	1,646	270	115,4	113,7	126,8	123
'91........	1,957	1,697	260	117,8	117,1	122,0	124
'92........	1,868	1,602	266	112,5	110,6	124,9	121
'93........	1,843	1,595	248	111,0	110,1	116,4	120
'94........	1,834	1,580	254	110,4	109,1	119,2	116
'95........	1,909	1,668	241	114,9	115,2	113,1	122
'96........	1,998	1,712	286	120,2	118,1	134,3	123
'97........	2,047	1,790	257	123,2	123,6	120,7	—
							Excess of Import. Per Cent. of Import.
1868–70	1,215	1,072	143	73,1	74,0	67,1	11·77
'73–75	1,502	1,312	190	90,4	90,5	89,4	12·65
'76–80	1,571	1,372	199	94,6	94,8	93,2	12·66
'81–85	1,732	1,509	223	104,2	104,3	104,5	12·88
'86–90	1,744	1,514	230	105,0	104,5	107,9	13·19
'91–95	1,882	1,628	254	113,3	112,4	119,1	13·50
'96–97	2,022	1,751	271	121,7	120,8	127,5	13·40

The figures in Table A state the special trade. In the last years they seem to be compiled in a manner differing a little from the method formerly used, but the difference is of little importance. Of course errors may be found in such a compilation. For instance, I have observed in some former years, but not in Hübner's *Tabellen* for the last years, that in the case of Denmark the value of the re-export is withdrawn from the export, but not from the import.

The figures are wanting for some years; therefore 1868-70 and 1873-75 are the average of but two years, and 1876-80 the average of but four years; in the same manner 1876-85 comprise only nine years.



In the last column of Table A the excess of imports is calculated as the average of the current, the past, and the next year; thus eliminating the inevitable discrepancies from year to year, which strongly affect even the excess of imports. Then it is interesting to see how the irregularity of the movements of the excess of imports (cost of conveyance, &c.) is changed in a regular movement, and to compare these figures with those indicating the movements of the value of the exchanged goods.

Speaking of the excess of imports or exports, it is obvious that for a special country the average of the named three years is of still greater importance, for the commodities consumed or produced in a certain year are not the only commodities imported or exported in this year, because a great deal of goods are preserved from year to year. In the three first columns of Table B (see below) are quoted the figures given by Sir Robert Giffen (*Journal of the Royal Statistical Society*, March, 1899, vol. lxii, pp. 40—44), and in the three last columns their average for the three years. Here again is to be seen the regularity spoken of above. Instead of small movements up and down, frequently changing, there are found large curves comprising many years, 1871-78, 1879-87, and 1888-98. I am not able to investigate in these movements (crossing not without regularity) times of activity and depression. The figures show how an increasing excess of imports in England is accompanied by an increasing excess of exports in the United States of America, and *vice versâ*. In France the movements are to a certain degree the same, but smaller and later than in England.

TABLE B.—*Excess of Imports* (*Bullion not included*). [In millions of £'s.]

	England.	France.	United States.	Average of Three Years.		
				England.	France.	United States.
	£	£	£			
1870....	59	2	9	55	9	15
'71....	47	27	10	49	6	19
'72....	40	−10	38	49	2	24
'73....	60	−10	25	57	−10	20
'74....	72	−11	− 4	75	− 2	8
'75....	92	−14	4	94	− 4	− 6
'76....	118	14	− 17	118	3	− 15
'77....	144	8	− 32	129	21	− 34
'78....	124	40	− 54	127	33	− 47
'79....	114	52	− 55	121	51	− 48
'80....	125	60	− 35	113	54	− 48
'81....	100	51	− 54	110	53	− 31
'82....	106	47	− 5	109	50	− 27
'83 ...	122	53	− 21	107	47	− 14
'84....	94	40	− 15	106	44	− 24
'85....	100	39	− 35	92	38	− 20
'86....	81	35	− 10	87	34	− 17
'87....	81	29	− 5	84	33	− 3
'88....	89	35	6	94	28	0
'89....	112	21	0	98	27	− 3
'90....	93	24	− 15	110	31	− 8
'91....	126	48	− 8	117	32	− 22
'92....	132	23	− 43	129	32	− 16
'93....	128	25	4	131	25	− 30
'94....	134	27	− 50	131	22	− 21
'95....	131	13	− 16	137	18	− 29
'96....	146	13	− 22	145	13	− 33
'97....	157	13	− 60	160	—	− 70
'98 ..	177	—	−129	—	—	—

TABLE C.

	Prices. Mr. Sauerbeck's Index Numbers.		Value of the Exports, see Table A.	Quantities.
	Original.	1876-85 = 100.		
			£	
1868	99	117	72	61
'69	98	116	—	—
1870	96	113	76	67
'71	100	118	—	—
'72	109	129	—	—
'73	111	131	92	70
'74	102	121	—	—
'75	96	113	89	79
'76	95	112	90	80
'77	94	111	—	—
'78	87	103	94	91
'79	83	98	94	96
1880	88	104	102	98
'81	85	100	104	104
'82	84	99	108	109
'83	82	97	109	112
'84	76	90	105	117
'85	72	85	95	112
'86	69	82	96	117
'87	68	80	99	124
'88	70	83	104	125
'89	72	85	110	129
1890	72	85	114	134
'91	72	85	117	138
'92	68	80	111	139
'93	68	80	110	137
'94	63	74	109	147
'95	62	73	115	157
'96	61	72	118	164
'97	62	73	124	170
'98	64	76	—	—
1868–70........	98	115	74	64
'73–75........	103	122	90	74
'76–80........	89	106	95	90
'81–85........	80	94	104	111
'86–90........	70	83	105	126
'91–95........	67	78	112	144
'96–97........	62	73	121	167

TABLE D.

	The Percentage of Increase or Decrease (–) from one Year to the next.			
	Prices.	Value.	Quantities.	Years of
1868	....	....	....	depression
'69	– 0·9	2·7*	4·9*	
1870	– 2·6	2·7*	4·9*	
'71	4·4	7·0*	1·5*	activity
'72	9·3	7·0*	1·5*	
'73	1·5	7·0*	1·5*	
'74	– 7·6	– 1·6*	6·5*	depression
'75	– 6·7	– 1·6*	6·5*	
'76	– 0·9	1·1	1·3	
'77	– 0·9	2·2*	6·8*	
'78	– 7·2	2·2*	6·8*	
'79	– 4·8	....	5·5	
1880	6·1	8·5	2·1	activity
'81	– 3·8	2·0	6·1	
'82	– 1·0	3·8	4·8	
'83	– 2·0	0·9	2·8	depression
'84	– 7·2	– 4·5	4·5	
'85	– 5·5	– 9·5	– 2·6	
'86	– 3·5	0·3	4·5	
'87	– 2·4	3·1	6·0	
'88	3·6	5·0	0·8	activity
'89	2·4	5·8	3·2	
1890	....	3·6	3·7	
'91	....	2·6	3·0	
'92	– 5·9	– 5·1	0·7	depression
'93	....	– 1·0	– 0·9	
'94	– 7·5	– 1·9	7·3	
'95	– 1·3	5·5	6·8	activity
'96	– 1·4	2·6	4·5	
'97	1·4	5·1	3·7	
'98	4·1	....	....	

* Average.

III.—*Report on the Agricultural Returns for* 1899.

THE agricultural statistics collected annually in Great Britain are now made public by the Board of Agriculture in several separate instalments, the first publication of the total areas of the principal crops and the number of live stock returned by the occupiers of land in the month of June, takes place before the end of August, and this is supplemented by successive issues furnishing complete details, several features of which have been already noted in this *Journal*. These separate statements, together with a variety of incidental matter respecting crop areas, production, and live stock, abroad as well as at home, and accompanied by tabular records of the imports, exports, and prices of agricultural produce, are eventually combined for permanent record in a final volume. This statistical year-book for 1899, lately laid before Parliament [Cd–166], contains one hundred and eighteen separate tables on the subjects above indicated.

In an introductory report on the information supplied in these tables, Major Craigie indicates that the data obtained for Great Britain were in 1899 collected from 518,088 separate schedules, returned by persons occupying more than an acre of land, with supplementary returns from 12,550 owners of live stock who either occupied no land or whose holdings did not exceed an acre. Resort to estimate, in the absence of voluntarily rendered returns, is now required in only 3 per cent. of the whole number.

The report gives the total area of land and water in Great Britain as 56,776,000 acres, while of this surface 2,726,000 acres were estimated to have been covered by woods and plantations, and 12,884,000 acres by rough mountain or heath grazings carrying sheep or other stock. Apart from these totals, what is known as the technically cultivated area, consisting both of permanent grass and arable land, in 1899 covered 32,457,000 acres. Rather less than 14 per cent. of this cultivated surface is reported to be in the occupation of its owners, the remainder being farmed by tenants.

The tendency to decrease in the extent of land under the plough, which showed a slight check in the returns of 1897, has been again resumed in both of the subsequent years. The reduction of the arable land of Great Britain in 1899, however, only amounted to over 91,000 acres, or one acre in 174.

The increase in the wheat acreage, which formed the subject of comment in 1898, has been followed by a reduction of 101,000 acres in 1899. This is ascribed to the potent influence of a reduction of the price level compared with the previous autumn. Three-fourths of the acreage lost to wheat was added to the surface under barley, and the area under oats was also greater.

By bringing the statistics supplied from Ireland and the Channel Islands into line with those for Great Britain, a summary for the whole of the United Kingdom is given in the report, as follows, for the past three years:—

United Kingdom.	1897.	1898.	1899.
AREAS.	Acres.	Acres.	Acres.
Under all crops and grass ...	47,868,553	47,792,474	47,795,270
Permanent pasture	27,924,710	27,978,699	28,100,672
Arable land	19,943,843	19,813,775	19,694,598
Corn crops	8,890,092	8,816,756	8,803,599
Green crops	4,327,568	4,261,441	4,274,063
Clover, &c., under rotation ...	6,152,798	6,211,012	6,105,832
Flax..................	46,995	35,391	35,463
Hops	50,863	49,735	51,843
Small fruit	70,245	70,238	71,963
Bare fallow	405,282	369,202	351,835

In round numbers the estimated total produce of the principal crops enumerated in Great Britain and in Ireland for the same period is given as under:—

Crops.	1897.	1898.	1899.
	Qrs.	Qrs.	Qrs.
Oats	20,445,000	21,572,000	20,767,000
Barley	9,077,000	9,341,000	9,317,000
Wheat	7,037,000	9,361,000	8,408,000
	Tons.	Tons.	Tons.
Potatoes	4,107,000	6,225,000	5,837,000
Turnips	29,785,000	26,499,000	20,370,000
Mangold	7,379,000	7,228,000	7,604,000
Hay (all sorts)	14,043,000	15,916,000	12,898,000

The year 1899, while showing fairly good results in most of the crops reported on, turnips only excepted, was on the whole inferior to 1898. For the principal crops in Great Britain itself the relative position of the year is concisely shown by Major Craigie in the following table, in which the average of the estimated yields of wheat, barley, oats, potatoes, turnips, and hay, for the ten years 1889-98 inclusive, is represented by 100 in each case, and the result of each harvest during that period, with the addition of that for 1899, is shown in relation to that standard:—

Year.	Wheat. — Average 1889-98, 29·86 Bushels per Acre = 100.	Barley. — Average 1889-98, 33·26 Bushels per Acre = 100.	Oats. — Average 1889-98, 38·86 Bushels per Acre = 100.	Potatoes. — Average 1889-98, 5·95 Tons per Acre = 100.	Turnips and Swedes. — Average 1889-98, 13·43 Tons per Acre = 100.	Hay (Clover). — Average 1889-98, 28·32 Cwts. per Acre = 100.	Hay (Permanent Grass). — Average 1889-98, 23·06 Cwts. per Acre = 100.
1889	100	96	101	104	109	118	127
'90	103	105	107	89	106	108	116
'91	105	103	100	96	99	101	102
'92	88	104	100	97	105	90	83
'93	87	86	92	111	99	66	54
'94	103	104	107	93	100	115	124
'95	88	95	95	112	96	96	83
'96	113	101	95	106	92	85	76
'97	97	99	99	87	104	103	108
'98	116	107	105	105	90	119	127
'99	110	103	100	94	69	97	100

The returns of the number of live stock in the United Kingdom in 1899 present satisfactory features. The totals for cattle, sheep, and pigs, all showing increases on the previous year.

The following table exhibits the progress which has been made both absolutely and relatively in regard to the population, on the numbers of horned stock of Great Britain in the past five years:—

Years.	Population of Great Britain.	Cows and Heifers in Milk or in Calf.	Other Cattle.	Proportion of Cows to 1,000 Persons.	Proportion of other Cattle to 1,000 Persons.
	No.	No.	No.	No.	No.
1895	34,538,701	2,486,000	3,868,000	72	112
'96	34,904,204	2,512,000	3,982,000	72	114
'97	35,273,634	2,532,000	3,968,000	72	112
'98	35,647,024	2,587,000	4,035,000	73	113
'99	36,024,438	2,671,000	4,125,000	74	115

The prices of agricultural produce are separately dealt with, and among the comparisons brought out in the report during recent years, the following figures show the official values of corn during each of the past four years, with those prevailing during the periods immediately preceding:—

Quinquennial Period.	Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Annual average, 1886-90	31	5	26	10	17	8
,, '91-95	27	11	25	3	18	–
Single year, 1896	26	2	22	11	14	9
,, '97	30	2	23	6	16	11
,, '98	34	–	27	2	18	5
,, '99	25	8	25	7	17	–

Although there are no general or average prices of meat available which can be considered as of anything like equal comparative value to those collected for grain under the Corn Returns Act, market quotations from non-official sources for beef, compared as under with the import values of meat furnished by the Customs, may be grouped for the periods above given. For beef per cwt. the figures stand as follows:—

Period.	Metropolitan Cattle Market.					London Central (Dead Meat) Market.					Liverpool Market.					Glasgow Market.					Average Values of Fresh Beef Imported.	
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
1886–90	36	2	to	66	6	29	2	to	57	2	32	8	to	54	10	44	4	to	54	10	44	7
'91–95	38	6	,,	65	4	28	–	,,	58	4	29	2	,,	50	2	35	–	,,	53	8	41	2
'96........	32	8	,,	61	10	22	2	,,	54	10	30	4	,,	46	8	32	8	,,	50	2	37	10
'97........	33	10	,,	63	–	30	4	,,	57	2	35	–	,,	49	–	35	–	,,	53	8	38	5
'98........	32	8	,,	59	6	29	2	,,	54	10	31	6	,,	47	10	35	–	,,	50	2	38	2
'99........	35	–	,,	64	2	31	6	,,	56	–	33	10	,,	52	6	37	4	,,	52	6	38	8

A corresponding table for mutton, reproduced below, is subject to the same observations:—

Period.	Metropolitan Cattle Market.				London Central (Dead Meat) Market.				Liverpool Market.				Glasgow Market.				Average Values of Fresh Mutton Imported.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1886–90	51	4	to 82	10	35	–	to 71	2	51	4	to 72	4	58	4	to 70	–	41	2
'91–95	51	4	,, 80	6	28	–	,, 67	8	44	4	,, 66	6	49	–	,, 68	10	38	5
'96........	45	6	,, 75	10	22	2	,, 65	4	42	–	,, 66	6	45	6	,, 63	–	32	7
'97........	51	4	,, 79	4	23	4	,, 67	8	42	–	,, 70	–	47	10	,, 65	4	30	3
'98........	44	4	,, 77	–	25	8	,, 66	6	46	8	,, 65	4	44	4	,, 64	2	29	7
'99........	46	8	,, 79	4	28	–	,, 67	8	49	–	,, 68	10	51	4	,, 64	2	31	7

It will thus be seen that, speaking broadly, the prices both of beef and mutton in the wholesale markets ranged higher in 1899 than in 1898, and the special series of prices of cattle collected by the Board of Agriculture under the Markets and Fairs (Weighing of Cattle) Act of 1891 are also appealed to as confirming this conclusion in the markets to which they apply. Major Craigie observes that, so far as they go, these new statistics, based on specific transactions, probably present a closer approximation to the facts than quotations such as those above given, of the general range of values, and although the practice of weighing cattle at market only progresses slowly, these returns can now be compared for seven years, as in the accompanying table, where the prices are given per cwt. of live weight:—

Years.	London.		Liverpool.		Newcastle.		Aberdeen.		Dundee.		Edinburgh.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1893....	39	4	34	6	35	10	37	4	35	4	36	–
'94....	38	6	32	4	35	4	36	3	34	2	34	8
'95....	38	–	33	8	35	4	36	8	35	3	35	1
'96....	37	–	32	4	33	10	34	10	33	6	33	4
'97....	38	10	32	8	36	2	36	–	35	2	35	8
'98....	36	6	31	10	33	4	34	8	33	8	34	–
'99...	38	–	33	6	36	2	36	10	35	2	36	6

The various changes in our imports of agricultural produce from different countries are discussed in the report, which points out how far the portion of our beef and mutton supply furnished from abroad in the form of dead meat now exceeds the imports of live animals.

As regards wheat and wheat flour the fluctuations in the supply are shown in the following table, which emphasises the decline in the Russian total and the recent increase in the shipments from Argentina and Canada.

Sources of Imports of Wheat and Flour returned as Wheat.

Year.	United States.	Russia.	Argentina.	India.	Canada.	Other Countries.	Total.
	Mln. cwts.	Mln. cwts.	Mln. cwts.	Mln. cwts.	Mln. cwts.	Mln. cwts.	Mln. cwts.
1890........	33·9	19·7	2·8	9·1	2·4	14·5	82·4
'91........	43·2	14·6	2·5	13·0	4·6	11·6	89·5
'92........	60·9	4·4	3·5	12·5	5·8	8·5	95·6
'93........	57·2	10·1	7·9	6·2	4·7	7·7	93·8
'94........	46·8	16·8	13·3	5·4	4·5	9·9	96·7
'95........	45·3	23·1	11·4	8·8	5·1	13·6	107·3
'96........	52·8	17·2	5·0	2·1	6·3	16·2	99·6
'97........	54·1	15·1	1·0	0·6	6·9	11·0	88·7
'98........	62·0	6·2	4·0	9·6	7·7	4·9	94·4
'99........	60·2	2·5	11·4	8·2	8·7	7·5	98·5

The volume of returns concludes with tabular summaries of colonial and foreign agricultural statistics, the additions to which include later information than has been before supplied respecting Denmark, Spain, and Argentina.

In commenting on this section of the statistics, the report notes the difficulties which retard the collection of exact official information as to areas, produce, or live stock in foreign countries. Referring, however, to the records of four very important States, the relative growth of both the herds and the flocks of the United Kingdom in recent years is contrasted with the movements elsewhere, and it is shown that there are 144 head of cattle, and 400 head of sheep to every 1,000 acres of measured surface in this country. This is a much larger proportion of sheep than any other European State possesses, and a larger proportion even of cattle than any other country than Holland, Belgium, and Denmark now returns. Moreover, such records as exist, carrying back the parallel information for five-and-twenty or thirty years, point to the relatively firm hold which sheep farming maintains in the United Kingdom—where the decline in the flocks, which is so general among the older countries of the world, amounts to only 7½ per cent., against 60 per cent. in Belgium, 57 per cent. in Germany, 46 per cent. in Hungary, and 42 per cent. in Denmark.

IV.—*The Proposed Census in* 1906.

Extract from a further report of the Census (1901) Committee, dated 28th May, 1900:—

"In accordance with the direction of the Committee, a memorandum was, on the 8th March, circulated from the Office, in which there was set forth the extent to which the recommendations of the Society had been incorporated in the Census Bill presented by the Government to Parliament. In this memorandum, and in the letter which covered it, especial weight was laid on the need for bringing influence to bear on the Government to include in the

Bill a provision for the taking of an intermediate census in the year 1906, and it was urged upon those to whom the communications were sent how necessary it was that all those interested should use their utmost endeavours to induce the Government to adopt that course.

"In referring to the support rendered in Parliament, we cannot omit to cordially acknowledge the valued and untiring assistance in regard to the proposals which the Society has received, both in his place in the House of Commons and in his office as one of our Vice-Presidents, from Sir Francis S. Powell."

As several of the Bodies communicated with asked to be informed of the further steps which the Society proposed to take in view of the fact that the Bill became law without the introduction of the provision to which the Society attaches so much importance, a letter in the following terms has been addressed to them:—

Royal Statistical Society,
9, Adelphi Terrace,
Strand, London, W.C.

11th June, 1900.

Dear Sir,

After receipt of the Society's letter of date 8th March, 1900, you inquired what further steps the Society proposed to take with a view to the procuring of a Quinquennial Census. I am now instructed to inform you that, the Bill having become law without the inclusion of the provision which the Society believed to be necessary, it only remains for it to note the words used in the House of Commons on the second reading of the Census Bill by the President of the Local Government Board:—"As to the "desirability of having a Census not so complete or elaborate as "the present every five years, he quite acknowledged that there "were many advantages to be gained by it, and that Census was "recommended by the Departmental Committee. But the introduction of the present Bill was not the least in conflict with such "a proposal. The Government had considered the question and "had decided that, upon the whole, if a Quinquennial Census were "to be taken, it should be provided for by a Special Bill in 1905. "The mind of the Government was perfectly open on the question; "and the fact that the present Bill did not provide for a Quinquennial Census did not preclude the Government from dealing with "the question when the time came."

It is the intention of the Royal Statistical Society to anticipate that time by organising a strong expression of public opinion on the question during the interval, in order that in 1905 the Government of the day may be effectively reminded of the many advantages which Mr. Chaplin agrees would be gained by the institution of a Quinquennial Census.

I am, dear Sir,
Yours faithfully,
Benedict W. Ginsburg,
Assistant Secretary.

V.—*Germany's Foreign Trade in* 1899. By FERDINAND MOOS.

THE report of the Imperial Office for Statistics, published at the beginning of the year, shows that in the year 1899 the value of the exports has for the time increased in greater proportion than the value of the imports.

English commercial circles ought to keep (and probably do keep) a watchful eye on this progress.

The bulk of the German foreign trade was as follows:—

	Imports.	Exports.
	Double centners.	Double centners.
1899	446,515,012	304,030,077
'98	427,298,388	300,943,183
'97	401,623,169	280,199,486
'96	364,102,570	257,198,756
'95	325,369,756	238,296,583

During the last five years the increase of both imports and exports has continued with remarkable firmness.

The increase amounts to 121,1 million double centners for imports, and to 65,7 millions for exports. Compared with the year 1898 the increase in 1899 amounts for imports to 19,2 million double centners; for exports to 3,0 millions. A comparison with 1897 affords the following figures of increase: imports 44,9 millions; exports 23,8 million double centners. As far as bulk goes, the increase of imports is considerably larger than that of exports.

The value of trade is stated as follows in thousands of marks:—

	Imports.	Exports.
1899	5,495,853	4,151,707
'98	5,439,676	4,010,565
'97	4,864,644	3,786,241
'96	4,557,951	3,753,822
'95	4,246,111	3,424,076

For the exports the increase in value during the first five years is 727,6 million marks; for imports 1,249 million marks.

Looking at the figures for 1899, we discover an increase in imports of 56,2 million marks, whereas exports increased by 141,1 millions. There is consequently a proportional increase of exports by 85 million over that of imports. In former years the increase in the value of exports had always been smaller than that of imports.

We must now consider the movement of *precious metals*, in order to draw correct conclusions. They are stated as follows :—

	Imports.	Exports.
	Mln. marks.	Mln. marks.
1899	5,197	3,991
'98	5,081	3,757
'97	4,681	3,635
'94	3,938	2,961

The exports of precious metals in 1899 have been double the imports. Compared with 1898 the exports have grown by 234 million marks, or 6·3 per cent., whereas the corresponding growth of imports was 116 million marks, or 2·3 per cent.

Detailed reports show that the increase of imports is chiefly due to the arrival of raw materials, whereas the growth of exports must be attributed to the shipments of highly valued manufactures. This is a special and very important feature in the report, particularly to English readers.

From the statements on the bulk of imports I take the following particulars :—

	1899.	1898.	1897.
	Double centners.	Double centners.	Double centners.
Cotton, cotton goods	3,943,118	4,205,960	3,662,317
Drugs, apothecaries' goods	12,850,801	14,126,038	10,834,330
Iron, iron goods	8,398,392	5,238,075	5,647,446
Ore, precious metals	73,568,701	61,517,412	57,454,687
Breadstuffs	66,444,554	71,721,641	64,112,131
Silk, silk goods	71,284	66,758	63,652
Coal, coke	154,369,437	147,238,976	147,595,699
Wool, woollen goods	2,441,417	2,343,519	2,161,782

The most remarkable features in this statement are the growth in the imports of iron, ores, and coal.

Imports of cotton have declined, but those of wool and silk increased. An increase of exports is shown by all the textile departments, but iron, wood, sugar, earthen goods, and cattle show a decline of exports.

The growth in the value of imports is shown by the following table :—

[Thousand marks.]

	1899.	1898.	1897.
Residues	78,419	67,419	69,729
Cotton, cotton goods	317,440	336,087	343,108
Drugs	248,544	230,027	233,533
Iron, iron goods	100,595	68,209	68,533
Ores, precious metals	476,445	511,169	334,680
Breadstuffs	881,298	932,080	780,734
Skins, hides	161,609	184,593	177,201
Wood	394,427	387,771	324,031
Machinery, vehicles, instruments	75,854	60,750	48,999
Copper, copper goods	99,527	101,889	89,183
Cutlery	46,608	43,800	39,234
Leather, leather goods	58,534	61,158	56,133
Linen	31,382	31,805	28,468
Literary goods, objects of art	44,449	41,587	43,021
Sweets, coloured goods	687,527	693,733	673,319
Oil, fat	191,351	196,785	154,458
Silk, silk goods	176,196	165,646	149,048
Coal, coke	141,252	132,941	127,119
Animal, animal produce	153,096	143,428	126,500
Cattle	154,708	150,919	151,043
Wool, woollen goods	466,730	412,655	380,762

Imports of cotton have considerably fallen off; linen is stationary since 1898. On the other side, imports of silk, and particularly of wool, show a large growth. Copper has not maintained its high figure in 1898. Imports of iron increased by 32 millions; of coal by 9 millions. Cattle, machines, and vehicles also present themselves with larger sums. Breadstuffs, skins, hides, leather and leather goods, colonial goods, all report declines.

The value of the exports is on record as under:—

[Thousand marks.]

	1899.	1898.	1897.
Cotton, cotton goods	253,655	231,886	230,105
Drugs, apothecaries' goods	370,773	339,953	320,010
Iron, iron goods	409,808	365,141	327,795
Ores, precious metals, earthen goods	228,143	319,415	211,931
Breadstuffs	123,590	119,429	105,986
Glass, glass goods	41,986	39,057	43,516
Wood and the like	117,160	114,250	111,313
Instruments, machinery, vehicles	246,890	217,790	187,090
Caoutchouc, guttapercha	72,377	53,976	36,818
Clothing, embroidery	116,789	107,379	128,079
Copper, copper goods	107,258	98,060	85,662
Cutlery	134,876	126,478	132,279
Leather, leather goods	162,676	148,117	144,390
Literary goods, objects of art	139,207	135,323	126,787
Colonial goods	358,831	374,843	398,302
Paper, paper goods	98,215	95,915	94,991
Silk, silk goods	168,840	158,778	136,593
Coal, coke	206,889	206,292	174,254
Earthen goods	63,776	59,661	59,053
Wool, woollen goods	314,907	311,614	326,463
Zinc, zinc goods	31,727	31,224	28,249

This is an almost phenomenal tableau of progress, which should not be overlooked by those who are engaged in the pursuit of foreign trade. Only sugar presents a decline, but nearly all the other articles show noteworthy increases. Even those which do not, at least maintain themselves on the point they had reached in 1898.

Cotton is on record with an increase of exports by 22 millions; silk by 10 millions; woollen goods by 3,3 millions, though wool has not yet quite recovered from the sort of depletion it had met with in 1898.

Iron goods show a growth of 44,7 millions; instruments and machines 29,1 millions; copper goods 9,2 millions; cutlery 12,4 millions. Zinc has maintained the position of 1898.

Exports of drugs increased by 30 millions; clothing and linen by 9,4 millions; leather goods by 14,5 millions; literary goods and objects of art 4 millions; earthen goods 4,1 millions. Exports of caoutchouc and guttapercha in 1899 are triple the amount they were in 1896. Exports of breadstuffs also move onward since the repeal of the identity-proof.

There never was such a brilliant export trade as in 1899.

The conclusions to be drawn from the foregoing figures will no doubt play an important part in the appreciations which must become the premises of any negotiations concerning new treaties of commerce.

VI.—*Notes on Economical and Statistical Works.*

Die Konsumtion der wichtigsten Kulturländer in den letzten Jahrzehnten. Von Kurt Apelt, Puttkammer und Mühlbrecht. 245 pp., 8vo. Berlin, 1899.

The author of this brochure has collected a great amount of useful information on an interesting subject. He is careful only to use statements from reliable authorities, or to warn his readers that the estimates, which are the best he can place before them, are not entirely reliable. One result of his exclusion of much doubtful matter and avoidance of guess work is that some awkward gaps occur in his statement of chronological progress in particular cases, and that much of the information stops short of being quite as much up to date as one might desire. It is far better to sacrifice something in this way than to offer untrustworthy statements, and Dr. Apelt has chosen wisely in preferring accuracy to an apparent completeness. It would serve no good purpose to enumerate the various heads of consumption, in respect of which comparisons between different countries and the course of progress of the leading nations is detailed. In the examination of the tables presented, attention is directed to many features of interest. The influence of falling prices and of increased means in the hands of the masses, as well as of the opposites of these, are observable. The transference of demand from less to more satisfying descriptions of food is a very notable fact in many of the cases examined. In materials of industry it is observable that while in many of the most important the place of England remains (as measured by *per capita* consumption) the first among the nations, in not a few cases the progress of the United States and of Germany is very clearly shown by the growing percentages of the British figures which express their consumption. In the abundant illustration afforded of the advancing scale of consumption among the masses of the chief nations of the western world, the little book helps us to realise that the gains of modern civilisation are extending to all classes of society.

Les Finances de la France sous la troisième République. Par Léon Say. 2 vols. (7·50 frs. each). 503 and 777 pp. 8vo., 1898 and 1899. Paris: Calmann Lévy.

These two volumes form part of a collection of the works of Léon Say which is being prepared by M. André Liesse, and rather illustrate the financial history of the Third French Republic than form a definite connected historical review. The two periods of which these two volumes treat are full of events of great importance in relation not merely to France but to her neighbours,—events in which her action is most interesting to study. The years covered by the first volume, the sub-title of which is *L'Assemblée Nationale*, are the years 1871-75. It embraces a small amount of material hitherto unpublished relating to financial questions during the Franco-Prussian war. It appears that it was the intention of Léon Say himself to publish a work on French finance, and that he intended to open it with the historical sketch here given and the annexed reports, which he prepared for the National Assembly in 1871, and of which the printing was at the time successfully resisted by M. Thiers. The total bulk of this previously unpublished matter is only some twenty-eight pages, the remainder of the two volumes being composed of articles, reports, speeches, and debates, which are allowed to tell their own tale. The activity of Léon Say, and, in the period covered, his official activity in particular, make this collection of his writings and speeches a really tolerably connected account of important phases of republican finance. The details of the great war loans form the subject of a large part of the first volume; here the report on the payment of the war indemnity, and the exchange operations necessary in connection with it, recall a problem of great interest, and one whose study still retains importance. The new taxes necessary to meet the heavy national expenditure are also subjects of discussion in what is here gathered together. The second volume embraces the activities of Léon Say as Minister of Finance, beginning with 1876 and ending with 1882. His budgets and budget speeches, defending the principles on which he acted, form an important part of the material. The monetary question too, and the difficulties presented in its solution, the railway question, and the creation of the redeemable three per cents., form the subject matter of speeches and debates here reprinted.

The editor has been content to permit the words of Say to speak for themselves for the most part, confining his own observations to quite brief but very helpful notes indicating at the commencement of each new section the bearing of what is to follow and its relation to the questions in connection with which it possesses interest and importance.

The spirit of Léon Say, and the importance of the work he accomplished, are well brought out in these volumes, the perusal of which will undoubtedly afford both pleasure and profit to students of finance.

Les Charbons Britanniques et leur Épuisement. Par Ed. Lozé. 2 vols. 1229 pp., 8vo. Paris: Ch. Béranger, 1900.

In this comprehensive study of the coal question and its relation to the power of the United Kingdom, both as a political unit and as a commercial and industrial State, is gathered together so enormous a mass of material that the main object of the work is at times completely obscured in the careful presentation of facts, the bearing of which, though real and important, is indirect. M. Lozé is no blind Anglophile, and occasional observations on the characteristics of our race are far from flattering, though their accuracy may perhaps be open to question.

In addition to studying the nature of the sources of supply of British coal, he enters into some detail on historic, almost prehistoric accounts relating to its working. He, further, gives not only a study of the geology of our islands, but an investigation relating to their commercial geography, which is bulky enough for a good-sized text-book on the subject. His readers who permit themselves to follow his guidance, will, without question, not approach their subject hastily and without due consideration of the various factors involved in the relation of our coal supply to our industrial position and political influence. Maps, diagrams, and tables are supplied in rich abundance to present the known facts effectively. Whatever the judgment may be which an expert reader may pronounce on the author's conclusions, it is certain that a student of the subject will need to go far before he will find so helpful a collection of material as that presented by M. Lozé.

As to conclusions, the author dwells very particularly on the point that it is not the physical exhaustion of the coal beds, but the increasing cost of production which must result from the exhaustion of the best supplies which is of real importance. He accepts Mr. Forster Brown's estimate of a supply of 15,000 millions of tons at depths within 2,000 feet, and works out a calculation of the date when so much as this will be used up as indicating the era of slackened advance which is to precede the decline of the output and with it of all the industrial pre-eminence which has been built up upon it, as well as of the commercial advantages which flow from the possession of a good supply of this useful material for return freights.

His tables of probable population and of probable production show a growth which, taken on the whole, is about in arithmetic progression, and therefore fall far below the figures built up on the hypothesis of geometric increase of output by Jevons. By the middle of the twentieth century these computations lead to the conclusion of a population of over 54 millions, and an annual coal output of 350 millions of tons, of which some 110 millions are assigned to export and bunker coal. The total output of the half-century from now to then will all but amount, assuming the accuracy of the forecast, to the 15,000 millions of tons in Mr. Forster Brown's estimate of best and cheapest resources.

As to the earlier years, the definitive figures of 1899 are in excess of the computed output in M. Lozé's tables, and his rate of increase seems to be conservatively estimated. So far as the initial figures and rate of growth are concerned, then, the facts are not overstated. The conclusion which other investigators have reached is then a very clear deduction in the eyes of this new inquirer. Shortly after the middle of the century he foresees that pause in the progress of Britain which others have realised as probable, though at a greater distance of time. If the supplies of coal capable of being cheaply worked do not greatly exceed the 15,000 millions of tons named, and if other sources of power are not found which may replace coal, and that within a generation or two, it must be admitted that the rate of progress in industrial and commercial development, which the recent past has witnessed in these islands, cannot be long maintained. This slackened rate of growth may, however, be very far from what is suggested in our author's concluding words: "L'Historien d'un puissant Empire terminera, bien probablement, le récit d'une période remarquable par ces mots: *finis Britanniæ*."

Simple Truths. By C. T. Gardner, C.M.G. 2nd edit. (4s.) 222 pp., 8vo. London: Harrison and Sons, 1899.

The little book which bears the above title possesses a peculiar interest from the circumstances of its appearance. It consists of a series of sixteen short essays, together forming a small treatise on economics, which were written by our consul at Amoy for circulation in China. The simplicity and clearness of diction of the English version are distinguishing features. The author does not aim at presenting new or even controverted views, so that there is nothing of this kind to which to direct attention. Possibly the mode of expression, when technical terms are employed, may suggest, to some who know how phrases get twisted to wrong meanings, a wish for some modifications of phraseology. To the statement that the *worth* of a thing *is* its *cost*, exception may also be taken, as it seems to embody, especially with its context, the errors based on deriving value wholly and solely from cost of production. On the whole it is a clear statement of simple outlines of political economy, with which are mingled some admirable reflections as to the influence of non-material conditions on the wealth and welfare of a country.

Tratado de Estadistica. Por Don Manuel Minguez y Vicente. 4 vols. 10 pesetas. 109, 131, 75, 265 pp., 8vo. Cordoba, 1898-99.

Though an elementary treatise, this work on statistics concerns itself with not a little which is hardly to be looked for in a merely elementary work. There is so much which is well worth doing in the field covered, that it is rather a pity to give so much space as is given in the volumes before us to mathematical theorems bearing on statistics. The influence of a metaphysical bent in the writer is clearly traceable in his work, as, for example, in the introduction of the question of the possibility of freewill coincidently with a predetermined order of events. His sketch of the history of statistics carries us back to the year 2238 B.C., though from that time to quite recent periods does not demand much of his space.

From the point of view of English readers we imagine that the value of the work will be found in the accounts given of the statistical machinery which exists in Spain, and of the way in which the public statistics of that country are prepared. These are given with some elaboration. We note that the author already makes proposals for the next census, though it is yet half-a-dozen years off. The appearance of such a work as this is, let us hope, an indication of a living interest in statistical science in Spain.

The Past and Present Condition of Public Hygiene and State Medicine in the United States. By Samuel W. Abbott. 103 pp., 8vo.

Among the *Monographs on American Social Economics* prepared for the Paris Exhibition, this account of the progress which has been attained in the United States in matters pertaining to public health, is not the least instructive. The advantages which have flowed from the adoption of suitable hygienic measures by some public bodies in authority in the States are illustrated by statistics, while the extent of the work yet remaining to be done is no less strikingly illustrated. The cartograms which show the extent and distribution of public water supplies are cases in point, while the scanty information which can be given on vital statistics from continuous registration, brings out the deficiencies for which all the elaboration of census investigations fails to compensate. The account is very brief, but gives a very good bird's-eye view of the facts covered by its title.

Japanese Notions of European Political Economy. By Tentearo Makato. 3rd edit. 142 pp., 8vo. 1*s.* Camden, N.J.: James Love.

This little pamphlet professes to be the report of a Japanese Commissioner to his Government. It has been accepted as such by a good many who received earlier editions or who have failed to search thoroughly the contents of this edition. It appears, however, from our own experience, that possibly not so many persons have been deceived by the trick as its performers assume. Official courtesy seems an element outside their consideration. Taking our own case, the fact that we sent the printed form of receipt with thanks, without criticism, is not to be taken as evidence that we were deceived. It is neither customary nor grateful to criticise a book in acknowledging its acceptance; criticism comes later, if at all, in the pages of the *Journal.* The fact that it is not a Japanese production, and that the reasonable assumption to be made from the statement on its title page is entirely inaccurate, is, however, now stated, though somewhat less prominently than the case would justify. The pretence that a member of the Japanese Legation at Washington wrote the first few pages, and a Special Commissioner of the Japanese Government wrote the rest, seems to the real writer a legitimate method of inducing people to read his statements, and on a par with the devices of some novelists and others who present their romances as being the actual experience of somebody or other. It seems to us that there are very substantial distinguishing features in the two cases. It is desirable to emphasise the fact that there has been no such report to the Japanese Government as is here represented.

As to the contents of the pamphlet, it will suffice to say that every economist of repute who is mentioned in it is represented as being not merely mistaken here and there in his teaching, but entirely illogical, and showing childish confusion in his reasoning as well as a lack of power to write intelligibly. The one and only lucid and accurate writer is apparently Henry George.

We repeat that it seems to us clearly desirable to warn readers against supposing that abuse of so many distinguished western writers is found in an official report to the Japanese Government. It is the Single Tax League or some of its members who regard the device we have described as a reasonable and honourable one.

Statistical and Economical Articles in Recent Periodicals.

UNITED KINGDOM—

Economic Journal. March, 1900—The Promotion of Companies and the Valuation of Assets according to German Law: *E. Schuster.* The Cloth Trade in the North of England in the Sixteenth and Seventeenth Centuries: *Beatrice Hewart.* Tithe and its Rating: *M. Barlow.* People and Houses: *Helen Bosanquet.* The Economic Legislation of the year 1899: *M. Barlow.* Notes towards the history of London Wages: *B. L. Hutchins.* The War Budget: *F. W. Hirst.*

Economic Review. April, 1900—Some Recent Criticisms on the New Trades Combination Movement: *E. J. Smith.* The Housing of the Poor in London: *Alice Lewis.* The Organisation of Costermongers and Street-Vendors in Manchester: *C. E. B. Russell and E. T. Campagnac.* The Principle of Justice: *Rev. W. R. Inge.* Poor-Law Statistics: *J. C. Wilson.*

Royal Agricultural Society's Journal. Part 1, 1900—Philip Pusey (1799—1855): *Sir E. Clarke.* The Food Supply of the United Kingdom: *R. F. Crawford.*

UNITED STATES—

Annals of the American Academy of Political and Social Science. March, 1900—Political Evolution and Civil Service Reform: *H. J. Ford.* Political and Municipal Legislation in 1899: *R. H. Whitten.* The Administration of City Schools: *J. T. Young.* The Financial Relation of the Department of Education to the City Government: *L. S. Rowe.* Representation in State Legislatures: *G. H. Haynes.* A Decade of Economic Theory: *R. T. Ely.*

UNITED STATES—*Contd.*

American Economic Association, Publications. May, 1900—The End of Villainage in England: *T. W. Page.*

American Statistical Association, Publications. December, 1899—Development of the Plan for a Census of the World: *J. H. Dynes.* Monthly Bulletin of the Statistics Department of Boston: *H. H. Cook.*

Journal of Political Economy. March, 1900—The General Savings and Old-Age Pension Bank of Belgium: *W. F. Willoughby.* Prices and Index Numbers: *R. S. Padan.* Reasonable Railway Mail Pay: *G. G. Tunell.* The Philadelphia Commercial Museum: *W. C. Betts.* The Trust Problem: A proposed solution: *C. A. Ficke.* The Condition of the Negro in Philadelphia: *Katharine B. Davis.*

Political Science Quarterly. March, 1900—Life in a Southern Mill Town: *H. Thompson.* Prices and Individual Welfare: *R. Mayo-Smith.* Government Regulation of Railways: *E. R. Johnson.* State Administration in New York: *J. A. Fairlie.* Value of Political Philosophy: *W. W. Willoughby.* Are Legal-Tender Laws *ex post facto?*: *B. T. De Witt.*

Quarterly Journal of Economics. May, 1900—Petty's place in the history of Economic Theory: *C. H. Hull.* Public employment offices in the United States and Germany: *E. L. Bogart.* The Housing Problem in Great Cities: *E. R. L. Gould.* The Currency Act of 1900: *F. W. Taussig.* Judicial decisions on Statutes prohibiting Combinations and Trusts: *R. C. Davis.*

Yale Review. May, 1900—Democracy and Peace: *S. M. Macvane.* The Political consequences of City growth: *L. S. Rowe.* Railway Progress and Agricultural Development: *H. T. Newcomb.* Experience of the Dutch with Tropical Labor. II. Abolition of the Culture System and transition to Free Labor: *C. Day.* Insurance for the Unemployed in Basel. The Concentration of German Industries.

FRANCE—

Annales des Sciences Politiques, 1900—

March—La jeunesse d'Alberoni: *E. Bourgeois* (*concluded in next number*). La Perse économique et monétaire: *R. G. Lévy.* L'armée anglaise: *M. B.* (*concluded*). Les ancêtres du chancelier de Bismarck: *P. Matter.* L'autonomie de nos vieilles colonies et l'expérience anglaise: *C. N.* Cabinets éphémères et ministères provisoires en Autriche: *W. Beaumont.*

May—Bismarck: *H. Welschinger.* La nouvelle loi monétaire des États-Unis (14 Mars, 1900): *A. Viallate.* Les institutions primitives. Les origines de la famile: le lévirat: *J. Flach.* Java et ses habitants: *A. Fabert.*

Journal de la Société de Statistique de Paris, 1900—

March—Aptitude de la France à fournir des colons: *A. Dumont* (*concluded*). Quelques résultats comparés des derniers dénombrements français: *A. Fontaine.* La nouvelle statistique autrichienne du mouvement de la population: *L. March.*

FRANCE—*Contd.*

Journal de la Société de Statistique de Paris, 1900—*Contd.*

April—Le stock d'or en Russie: *P. des Essars.* Classement des titres des emprunts de la Ville de Paris en 1886 et en 1892: *M. Duval.*

May—Des rapports que la statistique peut établir entre les mariages et les naissances d'un pays et sa situation économique: *C. Juglar.* Les finances de la ville de Paris: *G. Cadoux.* Les émissions et remboursements d'obligations des grandes compagnies de chemins de fer en 1899 et depuis 1883 et 1885: *A. Neymarck.* De la répartition des cultes dans certains États de l'Allemagne: *P. Meuriot.*

Journal des Économistes, 1900—

March—De l'assurance appliquée à l'extinction des emprunts hypothécaires: *R. G. Lévy.* Autarchie et Individualisme: *H. L. Follin.* Mafia et Mafiosi: *P. A. Ghio.* Le mouvement pacifique et la Conférence de la Haye: *F. Passy.*

April—Les assurances sur la vie en 1900: *E. Rochetin.* Les principes de la Révolution de 1789 et le Socialisme: *E. Martineau.* L'administration et les incendies de théâtres: *D. Bellet.*

May—Le péril socialiste: *V. Pareto.* La décadence de l'Angleterre: *G. de Molinari.* Coulisses et Coulissiers: *A. E. Sayous.* Les causes des Trusts: *T. G. Shearman.*

La Réforme Sociale, 1900. *Nos.*—

98—Les métiers de la petite industrie en Allemagne et les premières applications de la loi corporative de 1897: *V. Brants.* L'enseignement secondaire et les intérêts sociaux: *M. Boudhors.* Les conditions du travail aux ardoisières d'Angers: *P. Baugas.*

99—Un syndicat de faubourg sous l'ancien régime: *L. Guibert.* Patrons et ouvriers au xviii^e^ siècle: *G. Martin* (*continued in next number*). Le projet de loi Waldeck-Rousseau sur les associations et la charité privée.

100—Les orphelins et demi-orphelins à l'école primaire: *M. Gaufrès.*

101—Du régime de la propriété et des successions immobilières concernant les étrangers résidant en Turquie: *G. Cirilli.* Les placements d'enfants dans les orphelinats, écoles professionnelles, maisons de préservation et de correction: *A. des Rotours.* La paroisse de Montboyer depuis le xiv^e^ siècle: *D. Touzaud.*

102—L'œuvre de la conférence de la La Haye: *C. Dupuis.* Éducation et Hérédité, leur influence sur la criminalité: *P. Escard.*

103—Les garnis d'ouvriers à Paris: *G. Picot.* L'association dans la vie rurale en France et en Allemagne: *G. Blondel.*

Revue d'Économie Politique, 1900—

March—Travail en chambre et police sanitaire: *E. Schwiedland.* Evaluation de la fortune privée en France: *V. Turquan* (*to be continued*).

FRANCE—*Contd.*

Revue d'Économie Politique, 1900—*Contd.*

April—Rapports de l'Economie politique avec la morale et le droit: *G. H. Schmidt.* Nouvelle étude sur les livres fonciers: *J. Dumas.* Les opérations en participation et les émissions de valeurs.—La bourse moderne et sa loi d'airain: *A. E. Sayous.* Les transformations économiques de la Russie d'après un récent ouvrage: *G. Blondel.*

GERMANY—

Archiv für Soziale Gesetzgebung und Statistik. Heft 3 *und* 4, 1900—Grundzüge einer allgemeinen staatlichen Arbeitsvermittlung für Oesterreich: *Dr. E. Mischler.* Die Berufs- und Gewerbezählung im Deutschen Reich vom 14 Juni, 1895: *Dr. H. Rauchberg.* Landwirtschaftliche Manufaktur und elektrische Landwirtschaft: *O. Pringsheim.* Das Grundeigentum in Belgien in dem Zeitraum von 1834—1899: *E. Vandervelde.* Die Statistik der Unfall-, Alters- und Invaliditätsversicherung im Deutschen Reich für das Jahr 1897: *Dr. E. Lange.*

Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft. Heft 2, 1900. Domanial- und Landpolitik des Kongostaates: *G. K. Anton.* Deutschlands wirtschaftliche Entwickelung seit 1870: *C. Ballod.* Die sociale Zusammensetzung der Bevölkerung im Deutschen Reiche nach der Berufszählung vom 14 Juni, 1895. IV: *P. Kollmann.* Überblick über die wichtigsten Ergebnisse der norwegischen Socialstatistik: *C. Heiss.* Bericht über die 19 Jahresversammlung des Deutschen Vereins für Armenpflege und Wohlthätigkeit: *E. Munsterberg.* Die Organisation des deutschen Getreidehandels und die Getreidepreisbildung im 19 Jahrhundert: *K. Wiedenfeld.* Russisches Getreide: *M. Bürgel.* Die Aufgaben der am 1 Dezember, 1900, bevorstehenden Volkszählung: *E. Hirschberg.* Betrachtungen über das neue Invalidenversicherungsgesetz: *G. v. Witzleben.* Die Grossbazare und Warenhäuser, ihre Berechtigung und ihre Besteuerung: *W. C. Jäh.* Einige Bemerkungen über das Wesen der Hausindustrie: *A. Swaine.*

Jahrbücher für Nationalökonomie und Statistik, 1900—

March—Ueber die Frage der Einführung beweglicher Getreidezölle beim Ablauf der bestehenden Handelsverträge: *K. Diehl.* Die XV Generalversammlung des Vereins für Sozialpolitik in Breslau, 25—27 September, 1899: *M. Biermer.* Der Dienstbotenwechsel in der Stadt Mannheim: *S. Schott.* Das Geschlechtsverhältnis der Ueberlebenden in den Kinderjahren, eine selbständige Massenkonstante: *W. Kummann.*

April—Zur Entwickelungsgeschichte des Kapitalzinses: *J. Kulischer* (*concluded in May*). Die italienischen Arbeiterkammern und deren Bedeutung für die nationale Produktivität: *V. John.* Die wirtschaftliche Gesetzgebung Frankreichs in den Jahren 1897 und 1898: *F. Wissowa.* Neues über unser Südseeschutzgebiet: *G. K. Anton.* Die

GERMANY—*Contd.*

Jahrbücher für Nationalökonomie und Statistik, 1900—*Contd.*

Entwickelung des Preisniveaus in den letzten Dezennien und der deutsche Getreidebedarf in den letzten Jahren: *J. Conrad.*

May—Die Veranlagung der Einkommen- und Ergänzungssteuer in Preussen für 1898 und 1899, 1897/98 und 1899/1901: *M. v. Heckel.*

Zeitschrift für Socialwissenschaft—

March—Das Kulturproblem. II: *Dr. A. Vierkandt.* Wann sind unsere Steinkohlenlager erschöpft? *F. Frech.* Die sociale Lage der Witwe in Deutschland. II: *Dr. F. Prinzing.* Die Entwickelung des Gesamteinkommens im Königreich Sachsen in den Jahren 1878 bis 1898: *H. Tarnke.*

April—Die Anfänge des Landbesitzes. I: *Dr. H. Schurtz* (*continued in May*). Die Frauen und das Bürgerliche Gesetzbuch: *Dr. L. Fuld.* Grundzüge und Kosten eines Gesetzes über die Fürsorge für die Witwen und Waisen der Arbeiter: *Dr. F. Prinzing.* Der Kampf gegen die Unsittlichkeit und die "lex Heinze": *Dr. G. Aschaffenburg.*

May—Zur evolutionistischen Ethik: *F. Schultze.* Ueber den städtischen Liegenschaftsverkehr: *Dr. W. Kley.*

Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 1, 1900—Statistik der Preise. Bestand der deutschen Kauffahrteischiffe am 1 Januar, 1899, und die Bestands-Veränderungen im Jahre 1898. Verunglückungen deutscher Seeschiffe in den Jahren 1897 und 1898. Die Schiffsunfälle an der deutschen Küste während des Jahres 1898. Zollfreie Schiffsbaumaterialien (1899). Zur Statistik der deutschen Privat- Feuerversicherungs- Gesellschaften, 1898. Statistik der Krankenversicherung, 1897. Die Krankenversicherung in den Knappschafts-Kassen und Vereinen, 1897. Die Eheschliessungen, Geburten und Sterbefälle im Jahre 1898. Die Selbstmorde in den Jahren 1896 bis 1898. Die überseeische Auswanderung im Jahre 1899. Bei den deutschen Börsen zugelassene Werthpapiere, 1899. Weizen- und Roggen- Preise auf deutschen Fruchtmärkten, Oktober, 1898, bis Januar, 1900. Der Aussenhandel mit Reis in Deutschland und in einigen fremden Ländern.

AUSTRIA—

Statistische Monatschrift, 1900—

March—Die Vertheilung der Gesammtfläche Oesterreichs zwischen Gross- und Kleingrund- besitz: *A. Freiherrn v. Hohenbruck.* Die internationale Nomenclatur der Todesursachen: *Dr. S. Rosenfeld.* Die Sterblichkeit in den grösseren Städten und Gemeinden Oesterreichs im Jahre 1899: *Bratassević.*

April—Oesterreich-Ungarn und der Orienthandel: *Dr. W. Schwaighofer.* Körösy's relative Intensität: *Dr. S. Rosenfeld.* Statistische Gesellschaft für Griechenland in Athen.

ITALY—

Giornale degli Economisti, 1900—

April—L'Origine del baratto: a proposito di un nuovo studio del cognetti: *M. Pantaleoni* (*continued in next No.*). Una questione di cittadinanza in occasione di una recente elezione politica: *G. Semeraro.* La lotta contro la pellagra (i provvedimenti): *P. Sitta.* Ancora di Francesco Ferrara: *A. Bertolini.*

May—Commemorazione del M. E. Prof. Luigi Cossa: *V. Simoncelli.* Sul costo e sul reddito delle carriere universitarie: *E. Raseri.* Le Borse del lavoro in Francia: *G. François.*

Rivista Italiana di Sociologia. 1900—

January—February—Il diritto nella totalità dei suoi rapporti e la ricerca oggettiva: *I. Vanni.* Contributo allo studio demografico della famiglie e della generazioni umane: *E. Fahlbeck.* Le prime origini dell' incivilimento in Sardegna: *G. Curis.*

March—April—La sociologia ed il suo dominio scientifico: *E. Durkheim.* Il matrimonio nel Tibet: *C. Puini.* Sulli incivilimento e la decadenza delle nazioni: *M. A. Vaccaro.* La mendicità in Russia: *E. Tarnowski.* La folla in alcun' antichi scrittori: *G. Marpillero.*

RUSSIA—

Bulletin Russe de Statistique Financière. October—December, 1899—Valeurs mobilières russes. Dette publique de la Russie en 1837, en 1864 et en 1880. Révues officielles et autres. Nombre des usines et fabriques; leur chiffre d'affaires; population ouvrière. Taxation du commerce et de l'industrie; loi de 8 Juin, 1898. Rapport sur le budget de 1900. Consommation des boissons. Frappe de monnaies russes en 1893-99. Sociétés par actions créées en Russie en 1899. Production de l'industrie minière et métallurgique en 1897. Monopole de vente des spiritueux; ses résultats financiers. Rente russe 4%; récapitulation des émissions.

Russian Journal of Financial Statistics. Specimen No., 1900—Blunders, official and others. The production of gold in Russia. The revenue on spirits and the liquor reform. Russian weights, measures and monetary system. Profits of Russian Joint-Stock Companies. The National Debt of Russia. The budget of the Empire for 1898: estimates and fulfilment. The Russian State as a proprietor, capitalist, creditor and debtor.

SWITZERLAND—

Journal de Statistique Suisse. Band 1, *Lief.* 2—Bevölkerungs- und Vermögensstatistik in der Stadt und Landschaft Freiburg (im Uechtland) um die Mitte des 15 Jahrhunderts: *Dr. F. Buomberger.* Krankenkasse des Kantons Bern. Rapport sur l'inspection fédérale des mines dans les années 1896 et 1897: *J. B. Rocco.* Dr. Karl Becker: *Dr. Kummer.* Sir Rawson W. Rawson.

VII.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th June*, 1900, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From Austria-Hungary, United States, and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico. Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Dresden, Hanover, Bucharest, Madrid, Montevideo, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

Egypt—Bulletins et Mémoires de l'Institut Égyptien.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue Géographique internationale. Revue de Statistique. Société de Statistique de Paris, Journal.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia.

Spain—Sociedad Geografica de Madrid, Boletin y Revista.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals and Bulletin. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c. Sound Currency Committee, Leaflets.

Unofficial Periodicals and Publications of Societies, &c.—*Contd.*

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Trade Journal. Building Societies and Land Companies Gazette. Citizen. Colliery Guardian. Commercial World. Cotton. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Post. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Policy-Holder. Post Magazine. Public Health. Sanitary Record. Shipping World. Statist. Tuberculosis. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts' Journal. Surveyors' Institution, Professional Notes and Transactions.

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Boletin demografico argentino. Año i, No. 2, 1900. Diagrams, fol.	The Ministry of the Interior
Tucuman (Provincia de). Anuario de Estadistica, Año 1898. Diagrams, la. 8vo.	The Provincial Statistical Bureau
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Handel. Berichte über die Handelsbewegung sowie Bewertung der im Jahre 1898 ein- und ausgeführten Waren des österr.-ungar. Zollgebiets. 8vo. 1900	The Statistical Department, Ministry of Commerce
Bewegung der Bevölkerung im Jahr 1897	The Central Statistical Commission
Rechtspflege. Ergebnisse der Civilrechtspflege in 1896	
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Statistik des Sanitätswesens für 1897	
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(c) **United Kingdom and its Divisions**—*Contd.*	
United Kingdom—*Contd.*	
Labour Department of Board of Trade. Sixth Annual Abstract of Labour Statistics, 1898-99. [Cd–119.] 8vo.	The Board of Trade
Local Government Board. Supplement to 28th Annual Report, containing Report of Medical Officer for 1898-99. Plates. [C–9445.] 8vo.	The Medical Officer
Mines and Quarries: General Report and Statistics for 1898, Part 4, Colonial and Foreign Statistics. For 1899, Part 1, District Statistics	The Home Office
Municipal Corporations. (Reproductive Undertakings.) (88.) 1899	Purchased
Sea Fisheries, 1899. (58.) 1900 Statistical Tables relating to the Colonial and other Possessions of the United Kingdom. Part 22, 1894-96. [Cd–68.] 1900	The Board of Trade
Great Britain—	
Agriculture. Journal of the Board of. Vol. vi, No. 4, March, 1900	The Board of Agriculture
Agricultural Returns for 1899. [Cd–166.] Diagram, 8vo. 1900	The Board
England and Wales—	
British Museum. Catalogue of Printed Books. (Current numbers.) 4to.	The Trustees
Annual Summary of Births, Deaths, and Causes of Death in London and other large towns in 1899 Births, Deaths, and Marriages. Annual Report of the Registrar-General of (1898). [C–9417.] 1900	The Registrar-General of England
Judicial Statistics for 1898. Part 1, Criminal Statistics. [Cd-123.] 4to. 1900	The Home Office
London County Council—	
Markets. Special Report relative to existing markets and market rights . . . Plans, fol. (n.d.)	Mr. H. G. Rawson
Port of London Dock Accommodation. Return of information relating to. Parts 1. Extent, limits, and general character of the Port. 2. Authorities of the Port, with synopsis of their powers, duties, and rights. 3. System of government of the ports of the United Kingdom. 3 parts. Fol. 1900 Statistical Abstract for London, 1899. Vol. iii. 8vo. Technical Education Gazette. (Current numbers)	The London County Council
London—	
Fulham Public Libraries. 12th Annual Report, 1899. 8vo.	The Librarian
Mansion House Council on Dwellings of the Poor. Reports for 1894-98. 5 vols., 8vo. Plates	The Council
Birmingham. Report on the health of the city for 1899, and on Adulteration of food and drugs. Diagrams. 8vo.	The Medical Officer of Health
Bristol. Annual Report of Medical Officers of Health, and of Chief Port Inspector of Nuisances for 1899	"

Donations.	By whom Presented (when not purchased).
(c) **United Kingdom and its Divisions**—*Contd.*	
England and Wales—*Contd.*	
Halifax. Report of Medical Officer of Health, with Reports of Sanitary Inspector and Borough Analyst for 1899. Diagrams. 8vo. 1900	The Medical Officer of Health
Liverpool. Report on Health of Liverpool during 1899. Plans. 8vo.	"
West Hartlepool. Annual Reports of Medical Officer of Health and Sanitary Inspector for 1899. Map and diagram. 8vo.	"
Wigan. Fourth Annual Report on Health of Wigan, for 1899. 8vo. Also Reprints on Control of Infectious Diseases . . . by Wm. Berry. 14 pp. 8vo. [1899]	"
Scotland—	
Education. Scotch Code of Regulations for Evening Continuation Schools, 1900. [Cd–147.] 8vo.	The Scotch Education Department
Report of Committee of Council on Education, 1899-1900. [Cd–170.] 8vo.	
Supplement to Monthly and Quarterly Returns of Births, Deaths, and Marriages registered during 1899, and Vaccination Returns relative to Children born in 1898	The Registrar-General of Scotland
Edinburgh. Accounts of the city published in 1899. Fol.	The City Chamberlain

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Donations.	By whom Presented (when not purchased).
(d) **Authors, &c.**	
Abbott (*Samuel W.*). Past and present condition of public hygiene and state medicine in the United States. (No. 19, of series "Monographs on American Social Economics.") 103 pp., 8vo. Boston, 1900	The Author
Barrett (*Rosa M.*). The Rescue of the Young. 16 pp., 8vo. [1900]	"
Castro (*Juan José*).—	
Estudio de los Ferro-Carriles que ligaran en el porvenir las Republicas Americanas . . . 362 pp., maps, &c., la. 8vo. Montevideo, 1898	Mr. J. S. Keltie
Treatise on the South American Railways and the Great International Lines . . . 601 pp., maps, &c., la. 8vo. Montevideo, 1893	
Chapman (*Sydney J.*). Local Government and State Aid. 142 pp., 8vo. 1899	Purchased
Cooper (*Joseph*). Tabular Guides to Life Assurance. 1900	The Compiler
Cunningham (*W.*). The Growth of English Industry and Commerce. xiv + 492 pp., diagrams, 8vo. Cambridge, 1885	Mr. H. G. Rawson
Ely (*Richard T.*). Taxation in American States and Cities by . . . assisted by John H. Finley. xx + 544 pp., 8vo. New York, 1888	"
Fallati (*Johannes*). Die Statistischen Vereine der Englaender. Eine Inaugural-Dissertation nebst angehängten Thesen über Statistik . . . 1840. vi + 76 + 8 pp., 8vo. Tübingen, 1840	"

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(d) **Authors, &c.**—*Contd.*	
François (*G.*). Essai sur le Commerce et son organisation en France et en Angleterre. 425 pp., 8vo. Paris, 1891	Mr. H. G. Rawson
Gardner (*C. T.*). Simple Truths: the English version of a small Treatise on Political Economy for the information of Chinamen. 2nd edition. vii + 222 pp., 8vo. 1899	Messrs. Harrison and Sons
Guyot (*Yves*). La politique Boer. Faits et documents en réponse au Docteur Kuyper. 110 pp., 8vo. Paris, 1900	The Author
Hautefeuille (*L. B.*). Des droits et des devoirs des nations neutres en temps de guerre maritime. 2nd edition. 3 vols., 8vo. Paris, 1858	Mr. H. G. Rawson
Houses for the Working Classes . . . Extract from Journal of Royal Institute of British Architects, 1900. 30 pp., 4to. 1900	Mr. Owen Fleming
Houses for the Working Classes. How to provide them in Town and Country. 48 pp., 8vo. 1900	Messrs. P. S. King and Son
Kelly (*Edmond*). Government or Human Evolution. Justice, xv + 360 pp., 8vo. 1900	Messrs. Longmans and Co.
Levasseur (*E.*).—	
Comparison du Travail à la main et du travail à la machine. 104 pp., plates, 4to. Paris, 1900	The Author
L'ouvrier américain. L'ouvrier au travail. L'ouvrier chez lui. Les questions ouvrières. 2 vols., 8vo. Paris, 1898	Mr. H. G. Rawson
Lozé (*Ed.*). Les charbons britanniques et leur épuisement. Recherches sur la puissance du Royaume Uni de Grande Bretagne et d'Irlande . . . 2 vols., maps, diagrams, 8vo. Paris, 1900	The Author
"*Makato* (*Tentearo*)." Japanese Notions of European Political Economy . . . 3rd edit., revised with interlude and appendix. 142 pp., 8vo. Camden, N.J. [1900]	Mr. James Lovo
Men of the time: a Dictionary of contemporaries, containing biographical notices of eminent characters of both sexes. 7th edit., 8vo. 1868	Dr. B. W. Ginsburg
Minguez y Vicente. (*Don Manuel*). Tratado de estadistica. Parte 1—3. 1er edicion, 4 vols., 8vo. Cordoba, 1898-99	The Author
Ortolan (*Théodore*). Règles internationales et diplomatie de la Mer. 4^{e} edit. 2 vols., 8vo. Paris, 1864	Mr. H. G. Rawson
Ricardo (*David*). Letters of David Ricardo to Hutches Trower and others, 1811-23. Edited by James Bonar and J. H. Hollander. xxii + 240 pp., 8vo. Oxford, 1899	The Council of University College
Rozenraad (*C.*).—	
Tables comparing Gold and Silver Stock of principal Banks of Issue, their Bank Rate, rate of exchange on London . . . at end of March of 1899 and 1900 and at other periods. 3 sheets	The Compiler
Imports and Exports of Great Britain and other countries in the first six and first nine months of 1891-99 and in years 1895-99. Sheets	
Say (*Léon*). Les Finances de la France sous la 3^{e} République. 2 vols., 2^{e} edit., 8vo. Paris, 1898-99	Purchased

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(d) **Authors, &c.**—*Contd.*	
Schweitzer (*Dr. Carl A. v.*). Die handelspolitischen Interessen der osterreich. Landwirtschaft. 23 pp., 8vo. [1900]	The Author
Scott (*R. C.*). The cleansing of spirits by treatment with cold air. 10 pp., 8vo. 1899	”
Seyd (*Richard*). Statistics of Failures in the United Kingdom during 1899. Fol., 2 pp.	”
Smart (*William*). Taxation of Land Values and the Single Tax. viii + 125 pp., 8vo. Glasgow, 1900	Purchased
Smith (*A. M.*). Coins and Coinage. The United States Mint, Philadelphia . . . 120 pp., illustrations, 8vo. Phila. [1882]	Dr. B. W. Ginsburg
Smith (*Charles W.*). Price-Famines. The result of "Corners." The Crime of the Century. The Budget Tax on Produce Contracts. 15 pp., 8vo. 1900	The Author
Stevens (*Robert*). An Essay on Average and on other Subjects connected with . . . Marine Insurance. 5th edit. 8vo. xvi + 318 pp. [1835]	The War Office
Supan (*Alexander*). Die Bevölkerung der Erde . . . Heft 10. Europa. 84 pp., 8vo. Gotha, 1899	Purchased
Supino (*Camillo*). La Navigazione dal punto di vista economico. 2ª Edizione. 124 pp., 8vo. Torino. 1900	The Author
Tattersall (*William*). Cotton Trade Circular for 1899. 8 pp., 4to. Manchester. 1900	”
Taylor (*J.*). Taylor's Builder's Price-Book . . . corrected to January, 1813. xi + 143 pp., sm. 8vo. 1813	The War Office
Thomas (*Emile*). Histoire des ateliers nationaux. 395 pp., 8vo. Paris. 1848	Purchased
Virgilii (*Filippo*). Cooperazione nelle Sociologia e nella législazione (Manuali Hoepli). x + 228 pp., 12mo. Milano. 1900	The Publishers
Weddel & Co. (*W.*)—	
Prices and Imports of Frozen Meat, 1894-99. Diagrams showing fluctuations in each month. 4 sheets	Messrs. Weddel and Co.
Review of the Frozen Meat Trade, 1896-99, with Supplements	
Willcox (*Walter F.*)—	
Negro criminality. 25 pp., 8vo. Boston. 1899	The Author
Plans for the twelfth census, with brief statement of plans for Agricultural Census. 24 pp., 8vo. 1899	
(e) **Societies, &c. (British).**	
British Association. Report of 69th Meeting at Dover in Sept., 1899. Plates, 8vo. 1900	The Association
Cobden Club. Report and List of Members for 1899. 62 pp., 8vo.	The Club
Corporation of Foreign Bondholders. Appendix to 24th and 25th Reports for 1896 and 1897. 2 vols., 8vo.	Mr. J. S. Keltie
Exeter Chamber of Commerce. Annual Report for 1899. 8vo.	Sir C. M. Kennedy
Hull Chamber of Commerce and Shipping. Annual Report for 1898-99. 8vo.	

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(e) **Societies, &c. (British)**—*Contd.*	
Howard Association. Leaflets—The "Rural Exodus," and "Back to the Land"—Denmark's example. The Housing of the Poor and its Amelioration. 1900	The Association
Imperial South African Association. The British case against the Boer Republics. 36 pp., 8vo	
Institute of Actuaries and Faculty of Actuaries. Combined experience of Life Annuitants (1863-93) .... deduced from records contributed by Companies in respect of Annuities granted within the United Kingdom . . . Unadjusted Data. viii + 215 pp., 8vo. 1899	The Joint Mortality Committee
Liverpool Literary and Philosophical Society. Proceedings. No. 53, Session, 1898-99. 8vo., plates, &c.	The Society
Manchester Statistical Society. Transactions. Session 1898-99. 8vo	"
Peabody Donation Fund. 35th Annual Report of the Trustees for 1899	The Secretary
Trades Union Congress. Report of the 32nd Annual Trades Union Congress, Plymouth, 1899. 110 pp., plates, 8vo. 1899.	Purchased
(f) **Periodicals, &c. (British).**	
Annual Register for 1899	Purchased
Banking Almanac, 1900	
Bourne's Handy Assurance Manual, 1899. By William Schooling. Sm. 8vo.	
British Almanac for 1900	
County Councils . . . Companion, 1900	
Directory of Directors for 1900	
Financial Reform Almanac for 1900	
Howes' Directory to Metropolitan Charities for 1900	
Municipal Year Book of the United Kingdom for 1900. 8vo.	
Official Year-book of the Church of England, 1900	
Stock Exchange Year-Book for 1900	
Willings' Press Guide, 1900	
Brewers' Almanack and Wine and Spirit Trade Annual for 1900	Mr. P. C. Morgan
Co-operative Wholesale Societies, Limited, Annual for 1900	Mr. J. M. Knights
Insurance Register 1900: containing a record of the yearly progress and the present financial position of British Insurance Associations. viii + 134 pp. 8vo....	Messrs. C. and E. Layton
Licensed Victuallers' Official Annual (6th year of issue) for 1900. 8vo.	Mr. Albert B. Deane
Newspaper Press Directory. 55th Annual Issue, 1900. La. 8vo	Messrs. C. Mitchell and Co.
Post Magazine Almanack, the Insurance Directory, &c., for 1900. 8vo.	The Publishers
Statesman's Year-book, 1900. Maps. 8vo. 1899	The Editor

Vol. LXIII.] [Part III.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY.

SEPTEMBER, 1900.

REPORT OF THE COUNCIL

For the Financial Year *ended* 31*st December*, 1899, *and for the* Sessional Year *ending* 19*th June*, 1900, *presented at the* Sixty-Sixth Annual General Meeting *of the* Royal Statistical Society, *held at the Society's Rooms*, 9, *Adelphi Terrace, Strand, London, on the* 19*th of June*, 1900.

The Council have the honour to submit their Sixty-sixth Annual Report.

The roll of Fellows on the 31st December last as compared with the average of the previous ten years was as follows :—

Particulars.	1899.	Average for the previous Ten Years.
Number of Fellows on 31st December	896	964
Life Members included in the above	181	177
Number lost by death, withdrawal, or default	44	64
New Fellows elected	62	46

Since the 1st January last, 38 new Fellows have been elected, and the Society has lost 13 by death or resignation, so that the number at present on the list is 921.

The Society has to deplore the deaths of the undermentioned Fellows since June last year :—

		Date of Election.
d	Allard, Alphonse	1887
	Atkinson, George W.	1871
	Birkmyre, William	1892
d	Bunce, John T.	1865
	Clarke, Ebenezer	1871
	Cockle, Major George	1873
	Elliot, William Henry	1885
c d p	Farrer, The Right Hon. Lord	1878

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c Indicates those who had served on the Council.
d Indicates those who had been Donors to the Library.
p Indicates those who had contributed Papers.

		Date of Election—*Contd.*
	Gassiot, John Peter, J.P.	1879
d	Grimshaw, Dr. Thomas W., C.B., M.A.	1883
	Proctor, William	1884
c d p	Rawson, Sir Rawson W., K.C.M.G., C.B.	1835
	Sawyer, Lucian Willard	1888
	Singer, Charles Douglas	1850
	Snell, Arthur Henry	1887
	Tait, Patrick M., F.R.G.S.	1859
	Vernon, Dr. Henry H.	1897
	Watson, T. Wilkinson	1883
	Williams, Henry Maunder	1881

The financial condition of the Society is exhibited in the table shown at p. 377, in which the particulars are contained for the twenty-five years 1875-99.

The papers read and the Fellows elected at each of the Ordinary Meetings have been as follows:—

SESSION 1899-1900.

First Ordinary Meeting, Tuesday, 21*st November*, 1899.

Major P. G. CRAIGIE, Vice-President, in the Chair.

The following were elected Fellows:—

Walter Gorst Clay.
Leonida Colescu, D.Sc.
Miles Menander Dawson.
Edward William Garnon.
Benjamin Richard Gelling.
Herbert Dillon Gouge.
Frank Drew Harris, M.B.
John Castell Hopkins.
Arthur Lee.
James William Miller.
John Yeaden Ormsby.
Charles Frank Rowthorn.
Frank Sanderson.
Ernst Gottfried Stenberg.

Mr. R. F. Crawford read a Paper on "Notes on the Food "Supply of the United Kingdom, Belgium, France, and Germany."

In the discussion which followed, the undermentioned took part:—Sir Robert Giffen, Dr. Hermann Gerlich, Mr. Sydney Young, Mr. R. H. Hooker, Mr. R. Price-Williams, Mr. George Howell, Mr. R. H. Rew, Mr. G. B. Dobson, Mr. C. H. F. Gordon, Mr. N. L. Cohen, Major P. G. Craigie (Chairman), and Mr. Crawford in reply.

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c Indicates those who had served on the Council.
d Indicates those who had been Donors to the Library.
p Indicates those who had contributed Papers.

Second Ordinary Meeting, Tuesday, 19th December, 1899.

Sir FRANCIS SHARP POWELL, Bart., M.P., Vice-President, in the Chair.

The following were elected Fellows:—

Arthur Bourne.
Stephen E. Court.
Sir Henry Craik, K.C.B.
Osmond Elim D'Avigdor-Goldsmid.
Arthur Ellis Franklin.
Thomas Morgan Morris.
George Paish.
George Beeby Setchfield.

Mr. George Henry Wood read a Paper on "Some Statistics of "Working Class Progress since 1860."

In the discussion which followed, the undermentioned took part:—Mr. George Howell, Mr. H. Llewellyn Smith, Professor F. Y. Edgeworth, Mr. A. L. Bowley, Major P. G. Craigie, Mr. E. L. Hartley, Sir Francis S. Powell (Chairman), and Mr. Wood in reply.

Third Ordinary Meeting, Tuesday, 16th January, 1900.

RICHARD B. MARTIN, Esq., M.A., M.P., Vice-President, in the Chair.

The following were elected Fellows:—

Alfred James Bethell.
Edwin Leach Hartley.
James Patterson Logan.
John W. Miller.

Mr. Cornelius Rozenraad read a Paper on "The International "Money Market."

In the discussion which followed, the undermentioned took part:—Mr. R. B. Martin (Chairman), Mr. H. Schmidt, Mr. A. S. Harvey, Mr. Lesley C. Probyn, Mr. J. Barr Robertson, Mr. W. G. Clay, and Mr. Rozenraad in reply.

Fourth Ordinary Meeting, Tuesday, 20th February, 1900.

LESLEY C. PROBYN, Esq., Vice-President, in the Chair.

The following were elected Fellows:—

Samuel W. Abbott, M.D.
William Henry Aston.
James Thomas Herbert Baily.
George Crowley.
José Simao Da Costa.
The Right Hon. Lord Farrer.
Professor Irving Fisher, Ph.D.
Owen Fleming.
George Goodsir.
Alexis Raffalovitch.
Charles Farley Trenerry.
Samuel Herbert Wolfe.

Monsieur Marcus Rubin, Director of the Royal Statistical Bureau of Denmark, was unanimously elected an Honorary Fellow of the Society.

Mr. J. A. Baines, C.S.I., read a Paper on "Census-Taking and "its Limitations."

In the discussion which followed, the undermentioned took part:—Mr. L. C. Probyn (Chairman), Sir Robert Giffen, Mr. A. H. Bailey, Mr. W. Buchanan, Dr. Reginald Dudfield, Mr. N. A. Humphreys, Mr. G. Laurence Gomme, Mr. W. Grime, Mr. N. L. Cohen, and Mr. Baines in reply.

Fifth Ordinary Meeting, Tuesday, 20*th March*, 1900.

Sir Francis Sharp Powell, Bart., M.P., Vice-President, in the Chair.

The following were elected Fellows:—

Charles J. Bullock.
Adolphus Hugh Carter.
John S. Clark.
The Right Hon. Lord Hillingdon.
John Holliday.
William Hunt.
Thomas Mackay.
Harry T. Newcomb.
Simon Newton Dexter North.
Arthur Eccles Wall.
William F. Willoughby.
Frederick H. Wines, M.D.
John Edwin Yerbury.

The Howard Medal Prize Essay, by Miss Rosa M. Barrett, on "The Treatment of Juvenile Offenders, together with Statistics of "their Numbers," was read by Dr. Ginsburg, Assistant Secretary.

In the discussion which followed, the undermentioned took part:—Professor Hull, Mr. W. Chance, Dr. W. D. Morrison, Mr. John Glover, Dr. J. Macdonell, Mr. William Tallack, Mr. Jesse Argyle, Mr. H. McNiel, Mr. E. A. Hastings Jay, and Sir Francis S. Powell (Chairman).

Sixth Ordinary Meeting, Tuesday, 24*th April*, 1900.

A. E. Bateman, Esq., C.M.G., Vice-President, in the Chair.

The following were elected Fellows:—

Henry Hamilton Beamish.
James Kuttner.
Francis Seymour Weldon.

Mr. H. R. Bence-Jones read a Paper on "The Consumption of "Alcoholic Beverages."

In the discussion which followed, the undermentioned took part:—Mr. A. E. Bateman (Chairman), Professor Edgeworth, Mr. Stephen Bourne, Mr. T. J. Pittar, Major P. G. Craigie, Mr. C. Czarnikow, Mr. John Glover, Mr. F. W. Lawrence, Mr. A. H. Bailey, Mr. P. C. Morgan, and Mr. Bence-Jones in reply.

Seventh Ordinary Meeting, Tuesday, 15th May, 1900.

The Right Hon. Sir HENRY H. FOWLER, G.C.S.I., M.P., President, in the Chair.

The following were elected Fellows:—

Walter Samuel Kinnear.	A. Warren-Jones.

The President delivered his Annual Address, "Municipal "Finance and Municipal Enterprise."

A cordial vote of thanks to the President for his Address was moved by the Right Hon. G. Shaw-Lefevre, seconded by Mr. Charles Booth, and carried unanimously.

The arrangements[1] for the

Eighth Ordinary Meeting, to be held on Tuesday, 19th June, 1900,

are as follows:—

Sir ALFRED E. BATEMAN, K.C.M.G., Hon. Vice-President, to be in the Chair.

The following are to be proposed as Fellows:—

Cecil Gerard Ablett.	Arthur Cecil Pigou.

Henry Wolfenden.

The Paper to be read is on "The Defence Expenditure of the "Empire," by the Right Hon. Sir Charles Dilke, Bart., M.P.

The chief event of the session 1899-1900, outside the Society's usual course, has been the work in connection with its special Census Committee.

This Committee, whose earlier meetings were noticed in the report of last year, has continued its labours. A second interim report was made in November, 1899, adopted by the Council, and presented to the President of the Local Government Board, to the Secretary of State for Scotland, and to the Chief Secretary to the Lord Lieutenant of Ireland. On the 19th February, 1900, the Census Bill was introduced into the House of Commons. The Census Committee then saw that of their nine recommendations the large majority had been accepted by the Government.

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[1] The above intended arrangements were duly carried out. The candidates proposed were all unanimously elected. The Society's silver Guy Medal was presented by the Chairman to Mr. R. F. Crawford for his Paper on "Food Supply of "the United Kingdom, Belgium, France, and Germany," read before the Society on the 21st November, 1899.

In the discussion which followed the reading of Sir Charles Dilke's paper, the undermentioned took part:—Sir Alfred E. Bateman, Sir John Colomb, Mr. George Howell, Sir Robert Giffen, Mr. H. Seymour Trower, Mr. C. McL. McHardy, Mr. N. L. Cohen, Mr. H. F. Wyatt, and Sir Charles Dilke in reply.—ED.

I. The *uniformity* which they held to be so desirable had been secured in two of the three kingdoms.
II. The *date* for the taking of the census recommended by the Society had been adopted.
III. The *nationality* of those born abroad is to be recorded.
IV. The word *tenement* is substituted for the word *storey* in the Act.
V. The prescription that schedules are to be *copied into books* has been omitted, and the decision as to the practice to be followed on this point is to be left to the discretion of the Registrars-General.
VI. The record of houses *occupied though not inhabited* is secured.
VII. The *Bill was introduced early* enough in the session of the year before that in which the census is to be taken, to allow what will probably prove to be fair, if not abundant, time for preparation.

There was, however, one very serious omission in the Bill, to which attention was necessarily drawn, in that no provision was made for the taking of an intermediate census in the year 1906. The Government, though expressing themselves as not in any way opposed to the principle of a quinquennial census, intimated that, in their view, the proper time for seeking to obtain power to take the steps necessary for this purpose would be in the session of 1905, and they accordingly declined to insert a provision to this effect in the present Bill. The forms of the House prevented the introduction of an amendment to the desired effect by those who sought, on the Society's behalf, to move it. The Bill therefore became law in its original shape. But the movement set on foot by the Society's appeal to Members of Parliament, learned Societies, Town and County Councils, and other public bodies, seems to be widespread, and it is hoped that when the time arrives there will be forthcoming evidence of so strong a recognition of the need for an intermediate census, that the Government of the day will find it advisable to introduce the necessary legislation.

During the sessional year the Society has had to deplore the removal by death of two of its Fellows who had served in the office of President: Lord Farrer, who died on the 11th October, 1899, had been President in the years 1894-96, and Sir Rawson W. Rawson, who had not only occupied the Presidential chair in the sessions of 1884-85 and 1885-86, but had also been Editor of the *Journal* in the Society's early days, and a Member of Council from 1836-42, and again from 1876 till the time of his death, passed away on the 20th November, 1899. To the exertions and influence of the latter the Society owes in great part its Charter, and the Council are desirous of placing on record the deep sense of gratitude which they owe to him for the constant interest which he evinced in its welfare, and the attention which down to his final illness he devoted to its work and progress. Sir Rawson W. Rawson's family, recognising the regard in which the Society was held by their late relative, presented to the library a number of statistical works from his collection.

A slight alteration has been made in the regulations of the Library: these did not prescribe any limit to the number of volumes which individual Fellows might have out at any one time. The need for such a limitation is more fully appreciated when, as is now the case, Fellows make larger use of their privileges in regard to the borrowing of books, and it has therefore been thought advisable to declare that no Fellow shall be entitled to have more than ten volumes out at any one time. By this means it is hoped that the general convenience of those who refer to the Library will be safeguarded, whilst the practice of the Society in this matter will be brought into line with that observed in most other societies, and at the same time no hardship will be inflicted upon any individual Member.

In the summer of 1899, on learning that the University of London was to be removed to the buildings of the Imperial Institute at South Kensington, the Council approached the Government with a request for the grant of accommodation for the Society in the premises vacated at Burlington House. But in spite of the influential support given to this request by distinguished Fellows, the application was unsuccessful, and it was intimated that the whole of the available room would be required for other purposes.

The great increase in the number of statistical publications now issued taxes heavily the Society's space for books, and it has been deemed advisable to dispose, by sale or exchange, of certain works which either were duplicates or dealt with subjects quite outside the scope of the Society's objects. The greatest care has, of course, been taken that nothing should be parted with which could in any way be of statistical interest or value.

Being desirous of encouraging the study of statistics in every way in their power, the Council have been in communication with the London School of Economics with a view to an arrangement whereby, without infringing on the rights and interests of their own Fellows, they may be enabled to permit the students of the School to have access to the Society's library for study and research. The arrangement has not yet been concluded, but the Council expect that they will be able to extend the Society's usefulness in the direction indicated.

In accordance with the regulations under which the Guy Medal was instituted, the Council have awarded a medal in silver to Mr. R. F. Crawford for his Paper, "Notes on the Food Supply "of the United Kingdom, Belgium, France, and Germany," read before the Society at its meeting on the 21st November, 1899.

The Howard Medal for 1898-99 (together with 20*l.*) was awarded to Miss Rosa M. Barrett for her essay on the subject of "The Sentences on, and Punishments of, Juvenile Offenders "in the Chief European Countries and the United States." This essay was read at the Society's ordinary meeting in March, 1900.

Subject to the usual conditions, the Howard Medal for 1899-1900 will be awarded for an essay on the subject of "The results of "State, Municipal, and Organised Private Action on the Housing "of the Working Classes in London and in other Large Cities "of the United Kingdom."

The following subject has been selected for 1900-1901:—

"The history and statistics of Tropical Diseases, with especial "Reference to Bubonic Plague."

Encouraged by the results of the experiment made during the last session, when some of the Ordinary Meetings were held in the Society's own rooms, several of these Meetings have again been held in the Council room, and this arrangement appears to have given general satisfaction. On three occasions, however, meetings, at which an unusually large attendance was anticipated, were held in the Rooms of the Society of Arts, and to that Institution, for its courtesy in allowing the Royal Statistical

Society the use of its rooms, the Council desires to express its hearty thanks.

The average attendance of Fellows at the ordinary meetings during the past session has been about the same as in the previous year. The question of the hour for meeting which is most convenient to the Society again received the attention of the Council, who are still of opinion that the present practice suits the greater number of the Fellows, and they propose to continue to hold these meetings at 5 p.m.

For the first time since the year 1890 the number of Fellows on the list shows a gain over those of the previous year. There have been elected 62 new Members, as against 43 in 1898, and the net gain on the year, after allowing for deaths and resignations, is 18. It is hoped that this satisfactory condition of things may in the future be maintained. But the Council would urge upon the Fellows of the Society the importance of their efforts in obtaining new candidates, as it is only by individual private effort that those who are really interested in the objects of the Society, and who are therefore likely to assist its work, are to be brought in.

The cordial thanks of the Council have been tendered on behalf of the Society to the Auditors, for their honorary services in auditing the Treasurer's accounts for the past year.

The following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1900-1901, is submitted for the consideration of the meeting:—

COUNCIL AND OFFICERS FOR 1900-1901.

PRESIDENT.

THE RIGHT HON. LORD AVEBURY, F.R.S.

COUNCIL

William Mitchell Acworth, M.A.
Arthur Hutcheson Bailey, F.I.A.
Jervoise A. Baines, C.S.I.
*Henry Birchenough, M.A.
Horace George Bowen.
Arthur Lyon Bowley, M.A.
Edward Wm. Brabrook, C.B., F.S.A.
Nathaniel Louis Cohen.
Major Patrick George Craigie.
Richard Frederick Crawford.
*Frederick Charles Danvers.
*Geoffrey Drage, M.A., M.P.
Prof. F. Y. Edgeworth, M.A., D.C.L.
*George Laurence Gomme, F.S.A.
Frederick Hendriks, F.I.A.
Noel A. Humphreys.
John Scott Keltie, LL.D., F.R.G.S.
Charles S. Loch, B.A.
*George B. Longstaff, M.D., F.R.C.P.
John Macdonell, C.B., LL.D.
Richard Biddulph Martin, M.A., M.P.
Rev. Wm. Douglas Morrison, LL.D.
Sir Robert G. C. Mowbray, Bart., M.P.
Francis G. P. Neison, F.I.A.
*Thomas J. Pittar, C.B.
Sir Francis S. Powell, Bart., M.P.
Richard Price-Williams, M.Inst.C.E.
Lesley Charles Probyn.
Robert Henry Rew.
George Udny Yule.

Those marked * are new Members of Council

TREASURER.

Richard Biddulph Martin, M.A., M.P.

HONORARY SECRETARIES.

Major Patrick George Craigie. | Noel A. Humphreys.
Jervoise A. Baines, C.S.I.

HONORARY FOREIGN SECRETARY.

Major Patrick George Craigie.

Statement of the Condition of the Society in the last Twenty-five Years, 1875-99.

Year.	Number of Fellows on 31st December.	Number of Compounders included therein.	Losses during Year by Deaths, &c.	Gains by Election, &c., during Year.	Income from					Expenditure.			Amount Invested on 31st December.	Year.
					Annual Subscriptions.	Compositions.	Journal Sales.	Investments and other Sources.	All Sources.	Total.	Of which On Journal.	Of which On Library.		
					£	£	£	£	£	£	£	£	£	
1875....	607	87	31	50	928	105	133	65	1,231	1,733	449	18	1,271	1875
'76....	611	90	46	50	1,054	168	159	57	1,438	1,340	524	75	1,271	'76
'77....	683	101	40	112	1,117	252	151	77	1,597	1,476[a]	474	49	1,471	'77
'78..	746	115	45	108	1,197	294	169	72	1,732	1,849[a]	580	32	2,000	'78
'79....	783	119	52	89	1,300	126	176	96	1,698	1,808[a]	671	34	2,400	'79
1880....	808	129	49	74	1,317	273	202	110	1,902	1,806[a]	573	80	2,700	1880
'81....	807	130	45	44	1,306	84	145	114	1,649	1,697[a]	609	37	3,000	'81
'82....	786	135	63	42	1,291	189	227	131	1,838	1,782[a]	553	60	3,200	'82
'83....	860	139	41	115	1,361	126	150	141	1,778	1,943[a]	585	49	3,500	'83
'84....	909	150	57	106	1,447	294	207	1,198	3,146[b]	3,088[e]	615	38	2,500	'84
'85....	928	148	55	74	1,462	63	188	349	2,062[d]	2,070[c]	625	27	2,500	'85
'86...	943	156	70	85	1,583	231	180	92	2,086	2,106[e]	735	32	2,500	'86
'87....	977	160	59	93	1,621	126	188	94	2,029	2,135[f]	609	87	2,500	'87
'88....	1,059	172	58	140	1,686	334	171	101	2,292	2,003	711	58	2,500	'88
'89....	1,060	175	69	70	1,678	126	229	82	2,115	2,060[g]	623	146	2,500	'89
1890....	1,063	177	65	68	1,764	84	155	94	2,097	2,096[a]	567	68	2,900	1890
'91....	1,019	172	80	36	1,707	42	146	181	2,076[h]	1,957[i]	582	172	2,900	'91
'92....	994	171	70	45	1,634	84	158	104	1,980	1,883[j]	539	94	2,900	'92
'93....	964	176	66	36	1,560	124	128	92	1,904	1,921	578	63	2,900	'93
'94....	933	180	67	36	1,491	105	152	82	1,830	1,904	649	75	2,900	'94
'95....	928	180	59	54	1,468	63	180	82	1,793	1,823[k]	576	56	2,900	'95
'96....	910	181	48	30	1,478	42	168	84	1,772	1,787	571	44	2,900	'96
'97....	892	182	58	40	1,472	145	157	83	1,857	1,986[l]	650	50	2,900	'97
'98..	878	180	57	43	1,451	115	182	105	1,853	1,825	609	55	3,300[m]	'98
'99....	896	181	44	62	1,432	95	167	127	1,821	1,805	564	33	3,300[m]	'99

[a] Includes purchase of Government stock.

[b] Includes sale of 1,000*l.* stock.

[c] Includes expense of moving to new premises.

[d] Includes Dr. Guy's legacy of 250*l.*

[e] Includes cost of Jubilee Volume.

[f] Includes cost of Catalogue and Index, and of Charter.

[g] Includes cost of part iv of Index to Journal.

[h] Includes Mrs. Lovegrove's legacy of 100*l.*

[i] Includes outlay for Guy Medal and for binding the "Times."

[j] Includes outlay for drainage repairs.

[k] Includes cost of Subject-Index to *Journal*.

[l] Includes cost of doing up interior of premises.

[m] 2,900*l.* consols and 400*l.* G.N.R. stock, purchased with Mr. J. Heywood's Legacy of 500*l.*

The abstract of receipts and payments, and the estimate of assets and liabilities on 31st December, 1899, are subjoined, together with the report of the Auditors on the accounts for the year 1899:—

(I.)—Abstract *of* Receipts *and* Payments *for the* Year *ending* 31*st* December, 1899.

RECEIPTS.				£	s.	d.
Balance in Bank, 31st December, 1898 ...	£244	12	11			
Balance of Petty Cash.	24	3	3			
,, Postage Account	4	8	4	273	4	6
Dividends on 2,900*l*. Consols and 400*l*. G.N.R. Stock				92	11	4
Annual Subscriptions:—						
34 Arrears	£71	8	–			
634 for the year 1898	1,331	6	6			
14 in Advance	29	8	–	1,432	2	6
682						
Compositions				95	–	–
Journal Sales				166	14	5
Advertisements in Journal				34	13	–
Total				£2,094	5	9

PAYMENTS.				£	s.	d.
Rent less Tax	£362	10	–			
Less sublet	62	10	–	300	–	–
Rates and Taxes				51	–	9
Fire, Lights, and Water				37	12	6
Furniture and Repairs				16	15	3
Salaries, Wages, and Pension				550	–	–
Journal, Printing	£518	15	5			
,, Shorthand Reporting	33	11	8			
,, Literary Services	11	9	–	563	16	1
Ordinary Meeting Expenses				45	16	3
Advertising				31	9	9
Postage and delivery of Journals				77	–	8
Stationery and Sundry Printing				40	11	11
Library				32	19	4
Incidental Expenses				52	1	–
Guy Medal				1	10	–
Binding copies of Library Catalogue				4	2	–
				1,804	15	6
Balance per Bank Book	£261	–	–			
Balance of Petty Cash	27	4	4			
,, Postage Account	1	5	11	289	10	3
Total				£2,094	5	9

(Signed) "Chas. Atkinson,
"A. H. Bailey,
"Thomas A. Welton, F.C.A., } *Auditors.*"

"6*th February*, 1900.

(II.)—ESTIMATE *of* ASSETS *and* LIABILITIES *on* 31*st* DECEMBER, 1899.

LIABILITIES.	£	s.	d.
Harrison and Sons, for Journal ...	144	–	–
Miscellaneous, as per list	168	3	4
14 Subscriptions received in advance	29	8	–
	341	11	4
Balance in favour of the Society ...	3,328	3	10
(Exclusive of (1) the Reversionary Interest bequeathed to the Society by the late Dr. Guy; (2) Books in the Library; (3) Journals, &c., in Stock; and (4) Pictures, Furniture, and Fixtures.)			
	£3,669	15	2

ASSETS.	£	s.	d.
Cash Balances	289	10	3
2,900*l.* New $2\frac{3}{4}$ per cent. Consols cost	2,760	14	5
400*l.* G.N.R. Preferred Converted Stock.............. cost	484	11	6
Arrears of Subscriptions recoverable	52	10	–
Sundry debtors	82	9	–
	£3,669	15	2

(Signed) "CHAS. ATKINSON,
"A. H. BAILEY,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February*, 1900.

(III.)—BUILDING FUND (ESTABLISHED 10*th July*, 1873), BALANCE SHEET, *on* 31*st* DECEMBER, 1899.

LIABILITIES.	£	s.	d.	£	s.	d.
Amount of Fund invested at date of Transfer				267	9	8
Balance from 1895, 1896, 1897, and 1898 to be invested	31	15	5			
Dividends of 1899......	4	5	2	36	–	7
				£303	10	3

ASSETS.	Stock. £	s.	d.	Cost. £	s.	d.
Invested at date of Transfer	251	15	3	267	9	8
Remaining to be invested at date of Transfer	—			36	–	7
Invested by Bank of England since.........	35	7	4			
	£287	2	7	£303	10	3

(Signed) "CHAS. ATKINSON,
"A. H. BAILEY,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February*, 1900.

"REPORT OF THE AUDITORS FOR 1899.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1899,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1*st January to* 31*st December*, 1899, *and find them correct, showing the Receipts* (*including a Balance of* 273*l.* 4*s.* 6*d.*, *from* 1898) *to have been* 2,094*l.* 5*s.* 9*d.*, *and the Payments* 1,804*l.* 15*s.* 6*d.*, *leaving a Balance in favour of the Society of* 289*l.* 10*s.* 3*d. at the* 31*st December*, 1899.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 3,669*l.* 15*s.* 2*d.*, *and the latter to* 341*l.* 11*s.* 4*d.*, *leaving a Balance in favour of the Society of* 3,328*l.* 3*s.* 10*d.*, *exclusive of* (1) *The Reversionary Interest bequeathed to the Society by the late Dr. Guy.* (2) *Books in the Library.* (3) *Journals, &c., in Stock, and* (4) *Pictures, Furniture, and Fixtures.*

"*The amount standing to the credit of the Building Fund at the end of June*, 1899, *was* 303*l.* 10*s.* 3*d.*, *of which* 267*l.* 9*s.* 8*d. was invested in* 251*l.* 15*s.* 3*d. Metropolitan Consolidated Three and a Half per Cent Stock, in the name of the Treasurer, Richard B. Martin, Esq., M.P., leaving a sum of* 36*l.* –*s.* 7*d. to be invested. This sum, together with the amount already invested, was transferred to the name of the Society in July last, and the Fund at the end of the year* 1899 *was invested in* 287*l.* 2*s.* 7*d. of the above-mentioned Stock.*

"*They have verified the Investments of the Society's General Funds and the Building Fund, and also the Banker's Balance, all of which were found correct.*

"*They further find that at the end of the year* 1898 *the number of Fellows on the list was* 878, *which number was diminished in the course of the year to the extent of* 44, *by Death, Resignation, or Default, and that* 62 *new Fellows were elected, leaving on the list on the* 31*st December*, 1899, 896 *Fellows of the Society.*

(Signed) "CHAS. ATKINSON,
"A. H. BAILEY,
"THOMAS A. WELTON, F.C.A., } *Auditors.*"

"*6th February*, 1900.

PROCEEDINGS *of the* SIXTY-SIXTH ANNUAL GENERAL MEETING.

SIR ALFRED E. BATEMAN, K.C.M.G., Honorary Vice-President, in the Chair.

THE circular convening the meeting was read.

The minutes of the last ordinary meeting having been read and confirmed,

The CHAIRMAN (Sir Alfred E. Bateman, K.C.M.G.) said it was usual to take the Report as read. It gave an account of the various papers which had been read during the session, and he was glad to say that both the papers and the subsequent discussions compared well in interest with those of former years. There were in the Report two special points to which he might call attention. The first on p. 371 referred to the Committee appointed with regard to the Census. That Committee had continued its labours and done excellent work. It had proposed various amendments, and a number of them had been adopted by the Government, so that he thought the Society had shown, in spite of its age, that it had a great deal of vitality. In the second place, it was satisfactory to find there had been an increase in the numbers of their Fellows for the first time for some years. The net gain that year had been 18, and he hoped the increase would be continued, but, as had been stated in the Report, they must rely on individual Fellows in that respect. If each one would get a new Fellow every year, the Society would soon be on an excellent basis. With these observations, he would move that the Report be adopted.

Mr. A. H. BAILEY seconded the motion, which was carried unanimously.

Mr. GEORGE HOWELL and Mr. C. H. F. GORDON were appointed scrutineers of the ballot.

Mr. GEORGE HOWELL said it occurred to him that the election of the Council and Officers took place in a very formal way, and he thought the time had come when the Society should adopt a somewhat more democratic method with regard to the nomination for the Council. It seemed to him that some opportunity should be afforded to nominate Members of the Council beforehand. If they could popularise the election of the Council a little, he thought they might gain more Members. He did not propose to move any resolution on the matter, but simply threw out the suggestion for the consideration of the Council.

The CHAIRMAN said he was much obliged to Mr. Howell for his remarks. He believed that almost every learned Society elected its Council in the same way as the Royal Statistical Society, but there were one or two which sent round lists beforehand, and if anyone wished to propose any other name, he could make that substitution a week or a fortnight before. If any Fellow had anyone to suggest, and would communicate to the Council at any time, it would be considered.

Mr. C. McL. McHardy suggested that in future the Annual Report, and the list of proposed Officers, should go out with the notice of the Annual Meeting. Fellows might then read these over, and if they had any suggestions to offer, would be in a position to make them.

Dr. Ginsburg (the Assistant Secretary) said the list of the proposed Council did go out with the notice of the meeting. If the Annual Report went out with it also, the difficulty would be that the last meeting of the Session would not be included. Even on the present occasion they were only able to announce the arrangements made for the last meeting.

Mr. McHardy suggested that it would be well during the year for the Council to consider whether they should not make it a rule that any suggested alteration in the list should be sent in to the Council beforehand.

The Chairman said he quite agreed that the matter should be considered.

The Scrutineers reported that the proposed Council and Officers had been unanimously elected.

The Chairman moved a vote of thanks to the Scrutineers (which was carried unanimously), and announced that the names of five Fellows who were in default in paying their subscriptions would be erased from the list. They had all been four years in arrear.

Mr. J. A. Baines (Hon. Secretary) then announced that the subject for the Howard Medal for 1901 would be "The History and Statistics of Tropical Diseases, with especial reference to Bubonic Plague."

Mr. Howell moved a vote of thanks to the Chairman, which was seconded by Mr. McHardy, and carried unanimously.

The Chairman said he took the vote as not personal to himself, but as an appreciation of the work of the Council and others, especially the Honorary Secretaries and the Assistant Secretary, whose services had been most valuable to the Society.

MUNICIPAL FINANCE *and* MUNICIPAL ENTERPRISE. *The* ANNUAL ADDRESS *of the* RIGHT HON. SIR HENRY HARTLEY FOWLER, G.C.S.I., M.P., PRESIDENT *of the* ROYAL STATISTICAL SOCIETY, SESSION 1899-1900. DELIVERED 15*th May*, 1900.

I USE the word "municipal," not as confined exclusively to what are called technically municipal authorities of corporate towns, but as including the local authorities by whom local taxation is levied and expended in England and Wales.

The creation of these authorities as they now exist, their varied powers, and the results which they have accomplished, are chapters in the history of England with which, however interesting, I cannot now deal. I must limit myself strictly to the title of my paper, namely, the finance, and the enterprise involved in that finance, of our local authorities.

There are no materials for accurately ascertaining the extent of local taxation in the eighteenth century. That taxation consisted mainly of the poor rate, the county rate, the church rate, and the highway rate.

Mr. Goschen, in his report on local taxation, dated March, 1871, divided the first seventy years of the nineteenth century, as regards local taxation, into three periods. The first, ending 1840, when practically no addition had been made to the then existing rates; the second, from 1841 to 1851, when police rates and borough rates were added; and the third period, from 1851 to 1869, when modern rates, which Mr. Goschen describes as "sanitary "rates and town rates," were superadded.

In 1803 the receipts from the old rates, viz., poor, county, church, and highway, amounted to 5,348,000*l.*, in 1817 to 10,107,000*l.*, in 1827 to 9,544,000*l.*, in 1841 to 8,101,000*l.*, in 1851 to 8,916,000*l.*, in 1862 to 12,207,000*l.*, and in 1868, when the returns of rates were for the first time accurately made up and classified, the total of all local rates reached 16,800,000*l.* In 1891 the amount had reached 27,818,000*l.*, and in 1898 37,605,000*l.* These figures relate solely to rates levied for public purposes, and do not include tolls, dues, and other indirect local taxation, or the receipts from local enterprises carried on by, and at the risk of, local authorities.

The aggregate receipts of the local authorities (including these exceptions) during the last year for which we have returns, viz., the financial year ending 31st March, 1898, excluding loans, were 69,144,000*l.*, and the expenditure for that period, so far as it was not defrayed out of loans, was 67,823,000*l.*, which may be roundly stated as spent as follows:—

	Mlns.
On the relief of the poor	10¼
Police	5
Education	7¾
Streets and highways	8
Public lighting	1¼
Sewerage	1½
Other public works and purposes	7¾
Salaries, superannuation, establishment charges, election expenses, and other payments	3¾
Interest on loans and instalments of principal repaid	14¼
Gas and water works and tramways	5½
Harbours, piers, docks, and quays	1¾
Private improvement works	1
	67¾

The 69,144,000*l.* aggregate receipts, putting them roundly at 69,000,000*l.*, were contributed as follows:—

	Mlns.
Rates	37¾
Treasury subventions, local taxation, grants and other payments from exchequer, and grants under Agricultural Rates Act	11
Receipts from tolls, dues, invested property, fines, fees, &c.	6¼
Sales of property and repayment in respect of private improvements	2¼
Waterworks and gasworks and other undertakings producing revenue	11¾
	69

But, irrespective of these revenues and expenditure, there is also a large and increasing debt, and a capital expenditure defrayed out of borrowed money. The amount of debt incurred by local authorities could not be accurately ascertained in the year 1868, but it was then estimated at 60 million £. The first year for which local taxation returns give the amount of the local debt was 1875, and it was then stated to be 92,820,000*l.*; in 1885 it was 173,207,000*l.*, in 1895 it was 235,335,000*l.*, and in 1898 the outstanding debt was 262,017,000*l.*

The purposes for which this large sum has been borrowed, as far as it is practicable to identify them, may be stated roundly as follows:—

	Mlns.
Poor law purposes and lunatic asylums	14½
Schools	28
Gaols and police stations	1½
Highways and street improvements	31¼
Sewerage	27¼
Markets	6
Cemeteries	2¾
Public buildings, offices, fire engines, and other appliances	6¼
Parks and pleasure grounds, public libraries, museums, bath and washhouses, hospitals, &c.	9¼
Bridges and ferries	4¼
Artizans' and labourers' dwellings, allotments, and small holdings	5
Harbours, piers, docks, embankments, &c.	37
Private improvements and all other purposes, including advances to Manchester Ship Canal	15¾
Waterworks	48
Gasworks	18¼
Electric light	3¾
Tramways	3¼
	262

To appreciate the magnitude of the figures I have been quoting, one must contrast them with those of imperial income and the national debt. The imperial income for the corresponding year ending 31st March, 1898, was 106,614,000*l.*, and the national debt at the end of that year was 638,266,000*l.* Between 1875 and 1898 the national debt was reduced by 131 million £; the local debt was during the same period increased by 170 million £. It must, however, be borne in mind that of the 262 million £ of local debt a large sum represents money borrowed for reproductive expenditure or for purposes producing income, which produced in the same year a gross income of nearly 19 million £, and a net income of 4 million £; but after this allowance we are face to face with a taxation raised for local purposes of 38 million £ from rates and 11 million £ from imperial funds.

This expenditure is necessary and beneficial. It is an expenditure which cannot be decreased, and must and as I think ought to be largely increased in the interests of the community as a whole. I frankly admit that I am one of those who hold that local taxation is most unfairly levied; that what ought to be levied on both real and personal property is levied on real property exclusively; and that where this is partially remedied by and from the imperial purse, the amount and manner in which that relief is given is most unsatisfactory. However, as that difficult question is now under the consideration of a Royal Commission, it cannot be fairly or fully considered until their report is made.

The objects of local taxation were in the first instance the relief of the poor, the protection of public peace by means of the police, the construction and maintenance of roads and streets and the lighting of the same. That taxation next extended to the works necessary for the preservation of the public health, such as drainage, scavenging, and sewerage, asylums for lunatics, and hospitals for the isolation of infectious diseases, and the establishment of public baths, and the other steps necessary to prevent the spread of such diseases, and the improvement of the dwellings of the working classes. All these are matters as to which there can be no option, they are public obligations to be incurred for the benefit of the whole community, and towards which the whole community should contribute.

The next step in advance was the provision for the intellectual wants of the community in the shape of education, and free libraries. Next recreation, the establishment of art galleries, and the acquisition of parks and open spaces. These objects rest rather upon the principle of the co-operation of the many to secure for the advantage of all those opportunities for the healthy and elevating enjoyment of life, which were previously confined to a limited section of the inhabitants who were able to procure them at their own cost.

Public opinion may have advanced slowly, as it always does in this country, but it has advanced surely, and I do not think that there can be any sound objection to these provisions at the general expense for the benefit of the community at large.

The remaining class of local expenditure deals with the establishing and conducting certain enterprises at the risk and for the benefit of the local communities in which these enterprises are established, and this expenditure must be distinguished from what may be called the primary objects for which local taxation is levied.

I would follow this division in classifying the purposes for which the outstanding debt of 262,017,000*l.* has been raised by local authorities.

	£	
	137,212,000	for purposes for which local authorities are bound to provide.
	36,071,000	for educational and recreative purposes.
	87,581,000	for trading and similar purposes.
Total	260,864,000	

Adding to this 1,145,000*l.*, advances for private improvements to be repaid, we make up in round figures the total 262,017,000*l.*

In a detailed consideration of municipal trading enterprises, I am necessarily confined to municipal boroughs, as the parliamentary return in 1899 which was laid before Parliament does not include other local authorities.

That return deals only with the 265 municipal boroughs in England and Wales, including the whole of the county boroughs, but excluding the London County Council; but practically this return may be taken to represent the principal municipal enterprises of England and Wales, although of course there are similar undertakings carried on by other local authorities in more restricted localities.

These undertakings may be divided into six principal classes :—

Waterworks.
Gasworks.
Markets.
Tramways.
Electric lighting.
Piers, quays, and harbours.

It may be stated that with the exception of markets, most of which were founded originally under charters, only 46 of these enterprises were commenced before 1850. But some of the waterworks owned by municipalities date from very early times—Southampton from the year 1420, Hull from 1447, Bath from 1500, Plymouth from 1590, Rye from 1600, and Oxford from 1694. We thus see that even in ancient days those who were responsible for the management of some municipalities at least recognised the importance of a good supply of pure water to the public. Of these enterprises waterworks and gasworks are the principal ones, involving the largest amount of capital and the largest receipts. There are 173 municipal boroughs who own the waterworks supplying their respective localities. Of these the bulk were established by private companies, and subsequently purchased by the municipal authorities.

The figures relating to the 173 waterworks now under municipal control show—

	£
Total capital provided by corporations	48,434,890
Capital borrowed	46,546,391
Amount of debt paid off	5,140,486
,, in sinking funds or loans funds	1,332,508
Average annual income for the five years ending 31st March, 1898, or where undertaking commenced during that period, from date of commencement	2,644,937
Average working expenses for the same periods	902,612
,, annual amount paid for interest, and instalments of principal on capital borrowed	1,699,322
Average annual amount set apart for depreciation	15,211
Net average annual profit	27,792

There are 87 corporations who own their gasworks. The figures relating to these 87 gasworks are:—

	£
Total capital provided	20,175,764
Capital borrowed	19,254,350
Amount paid off	3,457,329
In sinking funds	1,075,802
Average annual income	4,517,126
,, working expenses	3,336,918
,, amounts paid for interest and instalments of principal	772,535
Average annual depreciation	37,333
Net average annual profit	370,340

There are 204 corporations who own their markets. The figures are as follows:—

	£
Capital provided	4,770,301
,, borrowed	4,211,695
,, paid off	1,361,518
In sinking funds	219,339
Average annual income	454,304
,, working expenses	204,826
,, annual amount paid for interest and instalments of principal	155,681
Depreciation	460
Net average annual profit	93,337

There are 28 corporations who own their tramways. The figures are as follows:—

	£
Capital provided	3,213,654
,, borrowed	2,689,384
,, paid off	499,377
In sinking funds	104,969
Average annual income	435,942
,, working expenses	302,670
,, annual amount paid for interest and instalments of principal	90,705
Annual depreciation	8,488
Net average annual profit	34,079

There are 55 corporations who own electric light works. The figures are:—

	£
Capital provided	3,416,711
,, borrowed	3,108,533
,, paid off	108,848
In sinking funds	101,642
Average annual income	304,499
,, working expenses	168,755
,, annual amount paid for interest and instalments of principal	126,659
Annual depreciation	3,747
Net average annual profit	5,338

There are 17 corporations who own piers, quays, &c. The figures are:—

	£
Capital provided	4,797,489
,, borrowed	4,676,829
,, paid off	361,522
In sinking funds	143,029
Average annual income	324,780
,, working expenses	197,495
,, annual amount paid for interest and instalments of principal	175,427
Annual depreciation	13,660
Net average loss	61,802

The summary of the foregoing, and of similar figures in respect of baths, cemeteries, working class dwellings, and other miscellaneous enterprises which the Local Government Board regard as reproductive undertakings carried on by municipal boroughs in England and Wales. The total results are:—

		£
Amount of capital provided		88,152,595
,, ,, borrowed		83,379,931
,, paid off	£11,720,904	
To which must be added amounts in sinking funds or loan funds	3,203,597	
		14,924,501
Average annual income for five years ended March, 1898, or, when the undertaking commenced during that period, from the date of commencement		8,898,376
Average annual working expenses		5,319,597
,, annual amount paid for interest and instalment of principal		3,127,271
Set apart for depreciation		81,167
Leaving the average annual net profit of all municipal reproductive undertakings		370,341

The profit in the great majority of cases is applied in reduction of rates. The practical result is that the income produced by the existing municipal enterprises pays the working expenses, the interest and instalments of borrowed capital, and leaves a profit balance of 370,341*l.*, or about ½ per cent. on the outstanding debt, which the Local Government Board, after making certain corrections on the foregoing figures, put at 71,883,232*l.*

There is no doubt that the tendency of the present day is in the direction of combination, by which the public can secure greater advantages at a cheaper rate, and in a more efficient manner than they could secure them by private enterprise, and there are beyond question certain public needs which ought to be supplied under the control of the local authorities. The difficulty arises as to what is the true boundary line which must be maintained between public enterprise carried on at the public cost and at the public risk, and private enterprise carried on by individual traders or a combination of individual traders in partnership or in companies. The history of the manner in which Parliament has hitherto dealt with this question must be recalled.

There are undertakings which require parliamentary sanction and legislative powers for their establishment and management. No individual trader, no private company, can establish for himself or themselves the right to compulsorily acquire other people's property, or to use for their own advantage the roads and highways which belong to the public. This country has adopted in the United Kingdom the principle that the railways of the country should be provided by private capital, and conducted by private management under public control. In India and in some of the Colonies railways are either partially or altogether managed by the Government. In addition to railways Parliament has vested large powers in joint stock undertakings for the construction and management of waterworks, gasworks, and similar undertakings. The legislature has accompanied the grant of these powers with elaborate conditions, for public control for securing the public convenience, for guarding the public safety, and for enabling the public on certain terms and under certain conditions to compulsorily acquire these undertakings.

So far as railways are concerned, I submit, that if the railways of this country are contrasted with what are called the State railways of many foreign countries, the contrast is favourable to the superiority of the management of our railway system. There may be some points on which State control results in a more economical mode of transport. But I am satisfied that no government department could manage the railway system of this country with the efficiency, the safety, and the speed which our great railway companies supply.

But be that as it may, we have, in the case of railways, vast private undertakings in which the whole community are vitally interested carried on by private management, invested with large statutory powers, but subject to public control, which successive legislation makes more and more stringent. The competition between one railway and another is now a competition of convenience and speed. A cut-throat competition in railway fares is practically impossible. Stephenson's maxim that "where combination was possible competition was impossible," so far as railway fares are concerned, has been proved to be true. But where there are two competing lines, say, *e.g.*, between London and Birmingham, or London and Edinburgh, going through different tracks of country and charging the same rates, there is an effective competition in the conveniences and speed of the two systems.

But in modern times we have seen another kind of locomotion gradually growing into public favour and serving a great public need—the construction of tramways in local districts. It is impossible to have two sets of tram rails in the same streets, say of any borough. You must have but one system, no matter by whom it is owned. In other words, it must be a monopoly, and as such using the public roads and streets which belong to the community.

There are also undertakings which are for the common good and for the general use of the whole community. The supply of pure water and of artificial light fall within this category.

Parliament has by general legislation controlled the management of certain undertakings which are for the common good and general use of the whole community, and has sanctioned in the public interest the transfer of these undertakings to municipal public authorities. I do not suppose that any controversy will arise as to the wisdom of the course which Parliament has adopted with respect to undertakings of the character to which I have referred.

There is a difference of opinion as to the extent to which municipal enterprise should be further carried. Lord Avebury, in a recent paper read before the London Chamber of Commerce, says that among the businesses which various municipalities are in the present session asking Parliament to grant them powers to undertake, are banking, pawnbroking, coal supply, saddlery, manufacture of electrical fittings, of the residual products of gas, and other branches of trade and manufacture.

Those who favour these and similar extensions of municipal trading, allege that a public authority can raise money more easily and cheaply than a private company can, and that therefore to leave certain undertakings in private hands is to sacrifice an economical advantage,—that if a profit can be made out of the general supply of some community, why should not the community realise that profit for itself,—and that as certain undertakings are of necessity monopolies, it is better that public authorities should hold these monopolies and carry them on for the public benefit.

In opposition to this it is alleged that the great difficulty of a corporation engaging in a trade is to hold the balance evenly between the ratepayer as a proprietor of the corporation undertaking, and the ratepayer as consumer, that where manufacturing or commercial undertakings are in the hands of the public authority, the power and authority of the authority is used to defend them as such, and to prevent anyone else conducting a competing trade,—that in any branch of industry which is of a mobile character, and which depends on the education of the public and the tempting of customers, it is desirable that the private capitalist, who understands his own business, should be free to conduct it in his own way. Without deciding as to the force of these conflicting arguments, I want to point out what appear to be some of the practical considerations which deserve special attention.

The extension of municipal enterprises beyond those which Parliament has practically sanctioned, involves consideration of (1) the nature and objects of the undertakings which it is proposed to entrust to the municipal authorities, (2) the capital outlay, (3) the probable income and financial results, (4) the management required, the protection of the interests of the ratepayers, (5) the question of competition or monopoly, (6) the protection of the general consumers against any charge beyond those of the open market, and (7) the guarding against extravagant expenditure by the authorities or permanent officials on whom the conduct and control of these undertakings will devolve.

I apprehend that there will be a general agreement that any extension of municipal enterprise should be confined to such undertakings as are clearly for the common good and the general use of the whole community, and that they should comprise undertakings which it is for the public advantage that they should be placed under public control.

It must, however, be borne in mind that the general user cannot decide the question of municipal enterprise. Take two articles which are perhaps in very general use, tobacco and beer. If general user is to be the test, it might be urged that public bodies should become manufacturers of tobacco and beer. They would be the guardians of the purity of both these commodities, and possibly they might carry them on so as to produce such a profit as would be an advantage to the community where they were located; but if the price was higher than the actual cost, the consumers of these articles are taxed to the relief of rates for the benefit of those who do not smoke and who do not drink beer. If, on the other hand, the prices are lower than the cost price, then the general ratepayers, including those who do not smoke and who do not drink, are taxed in order to supply cheap tobacco and cheap beer for a section of the community.

So far as the financial question is concerned it would, I think, be admitted that where undertakings are promoted by public authorities or private persons there is no getting rid of the capitalist. Whether the undertaking is established by the private individual or by a corporation, private or public, the capital will still have to be found, and the cost of finding that capital is a charge that will have to be met.

In raising capital for public purposes, all property of the community is in effect chargeable with its repayment with interest, and the public should therefore be guarded as far as possible against the risk of loss, and that to a great extent depends upon whether the management of the undertaking proposed is such as can be efficiently and successfully carried on by an unpaid public body having no personal pecuniary interest. This question of management is a main factor in the classification of enterprises which can or cannot be undertaken by public authorities. The industrial success of this country, whether it be manufacturing or commercial, has been attained by individual energy, impelled by the motive of individual ambition and profit, and devoting time and energy to the most minute and continuous superintendence of every detail.

And to these characteristics of individual management must be added the constant discoveries of inventions both in machinery, manufacture, materials, and distribution, which render such enormous services to the trade of this country.

Public undertakings must be carried on under the check of an impartial and constant audit. The system of audit by a public official which prevails through every department of local government, does not as yet apply to municipal boroughs, although Parliament, in the recent London Government Act, wisely applied this efficient audit to the metropolitan boroughs, it does not apply to municipal boroughs. This necessity for a thorough system of Government audit I regard as vital.

The question of competition with private traders is of the greatest importance. The municipality taxes the whole community, and in that taxation includes the private trader, and therefore in the case of competition with that trader, he is compelled to contribute to a fund which might be employed to compete with him in his own business, and so to destroy his trade.

And not only is the competing trader affected, but the general consumer may have to pay a higher price in consequence of the creation of a monopoly. We have hitherto regarded it as the right of every citizen to buy in the cheapest market, and safeguards would be required to prevent any interference with this principle.

The essential principle of free trade is that the whole body of consumers are not to be taxed for the benefit of the producers, and while we have to carefully eliminate from our commercial system everything which infringes that principle, we must not allow it to be violated for the benefit of public authorities any more than for the benefit of private traders.

Parliament has just appointed a joint committee of both Houses to consider the principles which should govern the power given to municipal and other local authorities for industrial enterprises.

An inquiry into municipal trading is neither directly nor indirectly an attack upon our municipal institutions. Those institutions have worked well in the past, they have accomplished great benefits to the advantage of the whole community, and it would be worse than a mistake in any way to hamper or to interfere with their beneficent operations.

I have been too long and too intimately connected with municipal life to be a party to such a proceeding. I have always advocated placing the supply of public water, of public light, and similar undertakings in the hands of the municipalities, and I am not prepared to accept the theory that the limit of successful municipal work has been reached, but when municipal and local bodies are claiming wider powers, embracing new areas of commercial and industrial activity, questions arise not only as to the extent to which those powers should be granted, but also as to the regulations and checks by which they should be accompanied. I have referred to some of these questions—there are others of great importance—and I think that a full and impartial consideration will be a great public advantage. Of course particular cases must be dealt with on their own merits, but all cases should be subject to the same provisions for guarding the interests of the ratepayers, for securing a strict supervision and audit of the expenditure of public money, for preventing the creation of unnecessary patronage, and for preventing the creation of a monopoly which would practically exclude legitimate competition.

It is impossible until such an inquiry has been completed to lay down any specific rules, or in other words to anticipate the conclusion to which the Committee may arrive. We can only point out the dangers and difficulties which may arise, the risks which may be run, and the injustice that might result.

The true friends of municipal life and institutions are those who desire to see that life developed and those institutions strengthened on the broad basis of public benefit and of public support. They will not be disposed to sacrifice the rare advantages of the devotion, wise supervision and experienced management and administration which are the advantages of the voluntary public service of that large army of citizens who control our local administration, but they will recognise that there are limits to the extent and efficiency of that management—they will see that it must not conflict with the just interests of the ratepayers—the traders, and the public, and they will not weaken the strength and value of municipal administration by extending it beyond those limits.

APPENDIX.

Table I.—*Purposes for which the Outstanding Loans of Local Authorities have been Raised, and Amounts Outstanding in respect of each purpose at 31st March*, 1898.

	£	£
Waterworks.		
Town councils	42,547,294	
Urban district councils (districts other than boroughs)	3,880,877	
Joint boards and joint committees	768,151	
Rural district councils	671,091	
		47,867,413
Harbours, Piers, Docks, and Quays.		
Harbour, pier, and dock authorities (including certain town and other urban district councils)	33,775,913	
Other authorities	425,109	
		34,201,022
Highways, including Street Improvements.		
Town councils	15,303,338	
Urban district councils (districts other than boroughs)	1,690,709	
London County Council	11,332,430	
Metropolitan vestries and district boards	1,216,578	
Commissioners of Sewers of the City of London	1,232,915	
Corporation of London and other authorities	506,718	
		31,282,688
Schools (including technical schools, reformatories, and industrial schools).		
Board schools, school board offices, reformatories, and industrial schools—		
School Board for London	9,316,551	
Other school boards	17,859,974	
County councils (reformatories, &c.)	24,696	
Technical instruction (buildings, &c.)—		
County councils, town councils, and councils of urban districts other than boroughs	602,173	
Other schools and colleges—		
Town councils and the Corporation of London	121,383	
		27,924,777
Sewerage and Sewage Disposal Works.		
Town councils	13,638,950	
Urban district councils (districts other than boroughs)	6,486,839	
London County Council	3,864,376	
Joint boards and joint committees	1,449,481	
Rural district councils	1,497,041	
Metropolitan vestries and district boards	253,319	
		27,190,006
Carried forward	—	168,465,906

Table I *Contd.—Purposes for which Outstanding Loans have been Raised.*

	£	£
Brought forward	—	168,465,906
Gasworks.		
Town councils	15,589,984	
Urban district councils (districts other than boroughs)	2,146,957	
Joint boards	555,178	
		18,292,119
Poor Law Purposes, &c.		
Workhouses, infirmaries, schools, hospitals, &c.—		
Boards of guardians	6,796,992	
Managers of asylum and school districts	2,486,164	
Vestry offices—		
Churchwardens and overseers	20,900	
Union Assessment Acts—		
Boards of Guardians	4,142	
		9,308,198
Markets.		
Corporation of London	2,708,300	
Town councils	2,737,495	
Urban district councils (districts other than boroughs)	301,060	
Commissioners of markets and fairs	56,570	
		5,803,425
Parks, Pleasure Grounds, Commons, and Open Spaces.		
Town councils	3,310,815	
Urban district councils (districts other than boroughs)	528,802	
Metropolitan vestries and district boards	317,604	
London County Council	1,006,500	
Corporation of London	194,000	
Other authorities	37,111	
		5,394,832
Public Buildings, Offices, &c. (not included under other headings).		
Town councils	4,195,403	
Urban district councils (districts other than boroughs)	492,980	
Metropolitan vestries and district boards (mortuaries, vestry halls, offices, &c.)	321,453	
London County Council (additional office accommodation and coroners' courts)	30,976	
County councils other than the London County Council (shire halls, assize courts, judges' lodgings, and petty sessions rooms)	291,011	
Corporation of London (the Royal Exchange)	41,600	
Receiver for the Metropolitan police district (police courts)	50,000	
Parish councils (parish rooms, parish offices, vestry halls, and parish halls)	8,047	
		5,431,470
Carried forward	—	212,695,950

Table I *Contd.—Purposes for which Outstanding Loans have been Raised.*

	£	£
Brought forward	—	212,695,950
Lunatic Asylums.		
County councils other than the London County Council	3,062,101	
Town councils	1,170,888	
London County Council	930,369	
Corporation of London	8,000	
		5,171,358
Advances to the Manchester Ship Canal Company.		
Town Council of Manchester	—	5,127,980
Housing of the Working Classes.		
London County Council	1,776,988*	
Town councils—		
Under Artizans and Labourers' Dwellings Improvement Acts and Artizans' Dwellings Acts	2,113,679	
Under Housing of the Working Classes Acts, 1890 and 1894	495,813	
Under local Acts	110,793	
Urban district councils (districts other than boroughs)	42,172	
Rural district councils	1,445	
Metropolitan vestries and district boards and the Commissioners of Sewers of the City of London	216,004	
		4,756,894
Bridges and Ferries.		
London County Council	1,772,039	
Corporation of London	1,050,900	
Town councils	1,000,336	
Urban district councils (districts other than boroughs)	328,681	
Other authorities	122,966	
		4,274,922
Electric Lighting.		
Town councils	3,057,739	
Urban district councils (districts other than boroughs)	134,142	
Metropolitan vestries and district boards	482,601	
London County Council	159	
		3,674,641
Carried forward	—	235,701,745

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* Including 717,319*l.* in respect of loans raised since the passing of the Housing of the Working Classes Act, 1890.

TABLE I *Contd.—Purposes for which Outstanding Loans have been Raised.*

	£	£
Brought forward	—	235,701,745
Tramways.		
Town councils	2,402,149	
Urban district councils (districts other than boroughs)	49,673	
London County Council	803,923	
		3,255,745
Land Drainage, Embankment, River Conservancy, and Sea Defences.		
Drainage, embankment, and conservancy boards, and Commissioners of Sewers (extra-metropolitan)	2,143,672	
Town councils	600,668	
Urban district councils (districts other than boroughs)	117,395	
London County Council	35,445	
		2,897,180
Cemeteries and other Burial Grounds.		
Town councils	288,064*	
Urban district councils (districts other than boroughs)	272,224*	
Joint boards and joint committees	10,172*	
Rural district councils	59,341*	
Parish councils acting under the Burial Acts	137,184	
Burial boards and other local authorities (except parish councils) acting under the Burial Acts	1,962,345	
		2,729,330
Baths, Washhouses, and Open Bathing Places.		
Town councils	992,712	
Urban district councils (districts other than boroughs)	80,868	
Metropolitan vestries (parishes in Schedule A to the Metropolis Management Act, 1855)	513,602	
Commissioners of Baths and Washhouses and certain other authorities administering the Baths and Washhouses Acts	288,418	
		1,875,600
Carried forward	—	246,459,600

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* In respect of cemeteries provided under the Public Health (Interments) Act, 1879, or under local Acts, in cases where the authority does not act as burial board under the Burial Acts.

TABLE I *Contd.—Purposes for which Outstanding Loans have been Raised.*

	£	£
Brought forward	—	246,459,600
Hospitals.		
Town councils	1,128,855	
Urban district councils (districts other than boroughs)	182,390	
Joint boards and joint committees	180,109	
Rural district councils	146,298	
Port sanitary authorities, &c.	30,304	
		1,667,956
Police Stations, Gaols, and Lock-up Houses.		
County councils other than the London County Council	471,425	
Town councils	463,339	
Receiver for the metropolitan police district	475,000	
London County Council	5,333	
		1,415,097
Public Libraries, Museums, and Schools of Science and Art.		
Town councils	651,185	
Other authorities	223,821	
		875,006
Fire Engines and other Appliances, and Fire Brigades.		
London County Council (Metropolitan Fire Brigade)	541,943	
Town councils	216,789	
Urban district councils (districts other than boroughs)	56,906	
Rural district councils	1,749	
		817,387
Slaughter Houses.		
Town councils	146,228	
Urban district councils (districts other than boroughs)	36,112	
		182,340
Allotments.		
Town councils	38,219	
Urban district councils (districts other than boroughs)	11,921	
Rural district councils	21,852	
County councils other than the London County Council	6,542	
Parish councils	298	
		78,832
Carried forward	—	251,496,218

TABLE I *Contd.—Purposes for which Outstanding Loans have been Raised.*

	£	£
Brought forward	—	251,496,218
Small Holdings.		
County councils other than the London County Council	—	6,316
Private Improvement Works.		
Town councils	529,424	
Urban district councils (districts other than boroughs)	597,741	
Rural district councils	17,556	
		1,144,721
*Loans for other Works and Purposes, and Unapportioned Loans.**		
Town councils (municipal accounts)	1,817,000*†	
,, (other accounts)	4,742,848*‡	
Urban district councils (districts other than boroughs)	810,686*§	
London County Council	1,421,270‖	
Metropolitan vestries and district boards	406,348	
County councils other than the London County Council	141,191	
Rural district councils	25,039¶	
Salmon and freshwater fishery conservancy boards	1,915	
Trustees of certain metropolitan squares	1,544	
Parish councils	1,876	
Port sanitary authorities	180	
		9,369,897
Total	—	262,017,152

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* Including loans which were raised for two or more of the purposes mentioned in this table, but which it has not been found practicable to apportion among the several purposes.

† Including 100,000*l.* in respect of subscription to Hull and Barnsley Railway, 168,550*l.* for expenses of incorporation and of local Acts, and 534,727*l.* for purposes connected with corporate property (other than that specified under separate headings).

‡ Including 135,392*l.*, costs of local Acts; 176,053*l.* for improvement of insanitary property at Liverpool, 376,134*l.* for night-soil removal works at Manchester, and 4,757*l.* under the Museums and Gymnasiums Act, 1891.

§ Including 78,552*l.*, costs of local Acts.

‖ Comprising 1,284,892*l.* on account of the Thames Tunnel and Subway, 28,295*l.* weights and measures, 7,273*l.* gas meter testing, 1,572*l.* electric meter testing, and 99,238*l.* workshops and store yards.

¶ Including 332*l.*, legal expenses and costs of local Acts.

Table II.

Loans Owing by the several Classes of Local Authorities at 31st March, 1898.

	County Boroughs.	Other Boroughs.		
Town Councils (accounts other than municipal accounts, excluding accounts of town councils acting as burial boards)—	£	£	£	£
Waterworks	34,651,103	7,896,191	42,547,294	
Sewerage and sewage disposal works	9,219,553	4,419,397	13,638,950	
Street improvements	12,826,606	2,476,732	15,303,338	
Gasworks	11,868,822	3,721,162	15,589,984	
Electric lighting	2,541,520	516,219	3,057,739	
Parks, pleasure grounds, commons, and open spaces	2,743,752	567,063	3,310,815	
Markets	2,006,661	730,834	2,737,495	
Housing of the working classes	2,662,543	57,742	2,720,285	
Tramways	2,241,167	160,982	2,402,149	
Baths, washhouses, and open bathing places	678,840	313,872	992,712	
Hospitals	950,265	178,590	1,128,855	
Slaughter houses	91,258	54,970	146,228	
Cemeteries	172,620	115,444	288,064	
Fire engines and other appliances	179,004	37,785	216,789	
Public offices and buildings	193,857	37,285	231,142	
Sea defences	99,436	74,353	173,789	
Costs of local Acts	81,808	53,584	135,392	
Allotments	18,263	19,956	38,219	
Private improvement works	304,279	225,145	529,424	
Loans for other purposes, and unapportioned loans*	4,332,279†	619,126	4,951,405	
	87,863,636	22,276,432		110,140,068
Town Councils (municipal accounts, excluding accounts of town councils acting as harbour, pier, or dock authorities)—				
Lunatic asylums	1,142,058	28,830	1,170,888	
Municipal buildings (not included under other headings)	3,177,349	786,912	3,964,261	
Prisons	130,712	10,014	140,726	
Police stations	259,036	63,577	322,613	
Schools and colleges	100,883	—	100,883‡	
Technical instruction (buildings, &c.)	425,218	93,969	519,187	
Public libraries, museums, and schools of science and art	560,884	90,301	651,185	
Bridges and ferries	776,971	223,365	1,000,336	
Corporate property (other than that specified under separate headings)	394,584	140,143	534,727	
Piers, docks, and quays	129,992	228,555	358,547	
Expenses of incorporation and of local Acts	104,116	64,434	168,550	
Advances to the Manchester Ship Canal Company	5,127,980	—	5,127,980	
Loans for other purposes, and unapportioned loans*	1,087,606	144,762	1,232,368§	
	13,417,389	1,874,862		15,292,251
Carried forward	—	—	—	125,432,319

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* Including loans which were raised for two or more of the purposes specifically enumerated above, but which it has not been found practicable to apportion among the several purposes.

† Including 308,234*l.* for floods prevention at Leicester, 176.053*l.* for the improvement of insanitary property at Liverpool, and 376,134*l.* for night-soil removal works at Manchester.

‡ Including 81,695*l.* for university buildings.

§ Including 100,000*l.* in respect of subscription to Hull and Barnsley Railway, 99,633*l.* in respect of loans raised under the Bristol (River Frome) Act, 1887, and the Bristol Floods Prevention Act, 1890, and 19,012*l.* for sea defences.

Table II *Contd.—Loans Owing by the several Classes of Local Authorities.*

	£	£
Brought forward	—	125,432,319
Urban District Councils (*Districts other than Boroughs*) (excluding accounts of councils acting as burial boards, or as harbour, pier, or dock authorities).		
Sewerage and sewage disposal works	6,486,839	
Waterworks	3,880,877	
Street improvements	1,690,709	
Bridges and ferries	328,681	
Gasworks	2,146,957	
Electric lighting	134,142	
Parks, pleasure grounds, and open spaces	528,802	
Markets	301,060	
Tramways	49,673	
Baths, washhouses, and open bathing places	80,868	
Hospitals	182,390	
Slaughterhouses	36,112	
Cemeteries	272,224	
Fire engines and other appliances	56,906	
Public offices	492,980	
,, libraries and museums	49,613	
Technical instruction (buildings, &c.)	68,341	
Piers, docks, and quays	30,847	
Sea defences	117,395	
Costs of local acts	78,552	
Allotments	11,921	
Housing of the working classes	40,635	
Private improvement works	597,741	
Loans for other purposes, and unapportioned loans	733,671*	
		18,397,936
Metropolitan Vestries (*parishes in Schedule A to the Metropolis Management Act*, 1855) *and District Boards* (excluding accounts under the Burial Acts).		
Highways and street improvements	1,216,578	
Sewerage and drainage works	253,319	
Parks, pleasure grounds, and open spaces	317,604	
Bridges	34,365	
Electric lighting	482,601	
Public conveniences	80,191	
Baths and washhouses	513,602	
Public libraries and museums	67,481	
Housing of the working classes	43,504	
Mortuaries and places for holding post-mortem examinations and inquests	16,272	
Depôts, wharves, yards, and refuse destructors	314,681	
Other public buildings	305,707	
,, works	11,476	
		3,657,381
Carried forward	—	147,487,636

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* Including 1,537*l.* in respect of labouring class dwellings under Provisional Orders of the Local Government Board.

TABLE II *Contd.—Loans Owing by the several Classes of Local Authorities.*

	£	£
Brought forward	—	147,487,636
Corporation of London.		
Markets	2,708,300	
Bridges	1,050,900	
Holborn Valley and Farringdon Market improvements	387,300	
Open spaces	194,000	
Other purposes (including loans raised for the Commissioners of Sewers of the City of London)	395,060	
	4,736,100	
Deduct—Loans raised for the Commissioners of Sewers of the City of London	325,500	
		4,410,600
Commissioners of Sewers of the City of London.		
Street improvements	1,232,915	
Housing of the working classes	172,500	
		1,405,415*
Joint Boards and Joint Committees for certain purposes.		
Sewerage and sewage disposal works	1,449,481	
Waterworks	768,151	
Gasworks	555,178	
Hospitals	180,109	
Cemeteries	10,172	
		2,963,091
Harbour, Pier, and Dock Authorities (including town and other urban district councils acting as harbour, pier, and dock authorities)	—	33,775,913
School Boards.		
School Board for London	9,316,551	
Other school boards	17,859,974	
		27,176,525
London County Council.		
Street improvements and embankments	11,332,430	
Main drainage	3,864,376	
Bridges and ferry	1,772,039	
Housing of the working classes	1,776,988†	
Thames tunnel and subway	1,284,892	
Parks, commons, and open spaces	1,006,500	
Tramways	803,923	
Lunatic asylums	613,955	
Fire brigade	541,943	
Workshops and storeyards	99,238	
Carried forward	—	217,219,180

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* This was the amount outstanding when the authority ceased to exist in January, 1898.

† Including 717,319*l.* in respect of loans raised since the passing of the Housing of the Working Classes Act, 1890.

TABLE II *Contd.—Loans Owing by the several Classes of Local Authorities.*

	£	£
Brought forward	—	217,219,180
London County Council—contd.		
Thames river (prevention of floods)	35,455	
Weights and measures	28,295	
Other purposes	43,755	
Loans taken over on adjustment of liabilities, &c., between the counties of Middlesex and Surrey, and London—		
Lunatic asylums	316,414	
Prisons	5,333	
Industrial schools	127	
Loans to other local authorities	15,710,726	
	39,236,379*	
Deduct—Loans owing to the Council by other local authorities	15,710,726	
		23,525,653
County Councils other than the London County Council.		
Lunatic asylums	3,062,101	
Police stations, gaols, and lock-up houses	471,425	
Shire halls, assize courts, judges' lodgings, and petty sessions rooms	291,011	
Reformatories and industrial schools	20,794	
County bridges	83,218	
Highways	44,532	
Technical instruction (buildings, &c.)	14,645	
Allotments and small holdings	12,858	
Other purposes	144,024†	
		4,144,608
Receiver for the Metropolitan Police District.		
Central office, police stations, &c.	475,000	
Police courts	50,000	
		525,000
Poor Law Authorities.		
Boards of guardians (workhouses, infirmaries, land, &c.)	6,801,134	
Managers of asylum and school districts (asylums, hospitals, schools, offices, &c.)	2,486,164	
Churchwardens and overseers (vestry offices)	20,900	
		9,308,198
Carried forward	—	254,722,639

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* The loans outstanding are stated in gross; whereas, in the tables prefixed to the Annual Money Bill laid before Parliament by the Council, they are shown at their net amount, after deducting the value of land let on lease and other assets. The amount is apportioned approximately among the several purposes for which it had been raised.

† Including 2,833*l.*, the outstanding balance of a loan raised to pay contributions towards the construction of a new bridge by the Corporation of Stockton; 7,000*l.* for a dairy farm; and 125,253*l.* in respect of a loan raised to pay the London County Council a balance of moneys due to them under an award of the Local Government Act Commissioners.

TABLE II *Contd.—Loans Owing by the several Classes of Local Authorities.*

	£	£
Brought forward	—	254,722,639
Burial Boards and other local authorities (except parish councils) acting under the Burial Acts	—	1,962,345
Rural District Councils (accounts other than those relating to highways).		
Sewerage and sewage disposal works	1,497,041	
Waterworks	671,091	
Hospitals	146,298	
Cemeteries	59,341	
Allotments	21,582	
Street improvements	3,664	
Private improvement works	17,556	
Other purposes	29,988	
		2,446,831
Highway Authorities in Rural Districts	—	61,787
Turnpike Trustees	—	9,435
Parish Councils.		
Purposes of the Burial Acts	137,184	
Parish rooms, parish offices, vestry halls, and parish halls	8,047	
Recreation grounds	356	
Allotments	298	
Public lighting	1,476	
Other parish property	400	
		147,761
Drainage, Embankment, and Conservancy Boards	2,070,332	
Commissioners of Sewers (extra-metropolitan)	73,340	
		2,143,672
Commissioners of Baths and Washhouses and certain other authorities administering the Baths and Washhouses Acts	—	288,418
Commissioners for Public Libraries and Museums and certain other authorities administering the Public Libraries Act, 1892	—	106,727
Commissioners of Markets and Fairs	—	56,570
Port Sanitary Authorities.		
Hospitals, &c.	—	29,958
Conservators of Commons and Trustees of certain Open Spaces	—	35,000
Bridge and Ferry Trustees	—	2,550
Trustees of certain Metropolitan Squares	—	1,544
Salmon and Freshwater Fishery Conservancy Boards	—	1,915
Total	—	262,017,152

Return (ordered by the House of Commons on 4th August, 1898, and presented 6th March, 1899) of the water, gas, tramways,

SUMMARY NOTE OF THE

The Principal Undertakings in respect of which particulars are given in this Return are Working Class Dwellings, and Piers, Quays, &c. Totals in respect of each of these

1	2	3	4	5	6
	Capital.				
Name of Undertaking.	Total Capital, inclusive of Borrowed Capital, provided by Corporation.	Amount of Capital Borrowed.	Amount of Capital Borrowed which has been Paid Off.	Balance of Capital Borrowed which was outstanding at 31st March, 1898.	Amount in Sinking Fund or Loans Fund at 31st March, 1898, in respect of Capital Borrowed.
	£	£	£	£	£
Waterworks	48,434,890	46,546,391	5,140,486	41,570,880	1,332,508
Gasworks	20,175,764	19,254,350	3,457,329	15,796,500	1,075,802
Tramways	3,213,654	2,689,384	499,377	2,190,007	104,969
Electric lighting	3,416,711	3,108,533	108,848	2,990,582	101,642
Markets	4,770,301	4,211,695	1,361,518	2,923,191	219,339
Baths, &c.	1,498,079	1,194,407	275,967	914,280	77,453
Cemeteries or burial grounds	1,052,873	990,667	390,170	600,497	53,294
Working class dwellings	718,634	633,475	56,711	576,764	95,067
Piers, quays, &c.	4,797,489	4,676,829	361,522	4,315,307	143,029
Miscellaneous	74,200	74,200	68,976	5,224	494
Total	88,152,595	83,379,931	11,720,904	71,883,232*	3,203,597

* The apparent discrepancy in Col. 5 is due to the fact that sums to the amount of 14,561*l.* given; and sums to the amount of 238,766*l.* are included in Col. 5, particulars in respect of

† The apparent discrepancy in Col. 9 is due to the inclusion in Col. 8 of a sum of 34,889*l.*,

There are other undertakings carried on by town councils, *e.g.*, sewage disposal works, allotments, slaughterhouses, public libraries, harbours, &c., from which revenue is derived, which do electric lighting, and other reproductive undertakings carried on by municipal boroughs.

Local Government Board.

Waterworks, Gasworks, Tramways, Electric Lighting, Markets, Baths, &c., Cemeteries, separate Classes of Undertaking are shown in the following summary.

7	8	9	10	11
Income.				
Average Annual Income for the Five Years ended 31st March, 1898, or, if the Undertaking commenced during that Period, from Date of Commencement.	Average Annual Working Expenses for the Period mentioned in Col. 7.	Average Annual Net Profit for the same Period.	Average Annual Amount Paid during the same Period in respect of Principal and Interest on Capital Borrowed.	Average Annual Amount set apart for Depreciation.
£	£	£	£	£
2,644,937	902,612	1,744,361	1,699,322	15,211
4,517,126	3,336,918	1,180,208	772,535	37,333
435,942	302,670	133,392	90,705	8,488
304,499	168,755	137,320	126,659	3,747
454,304	204,826	249,908	155,681	460
99,256	119,414	4,871	46,829	2,268
69,418	61,808	13,048	37,567	—
12,514	3,842	8,672	21,837	—
324,780	197,495	127,535	175,427	13,660
35,610	21,257	14,353	709	—
8,898,376	5,319,597	3,613,668†	3,127,271	81,167

are included in Col. 3, particulars in respect of which required for Cols. 4 and 5 cannot be
which required for Cols. 3 and 4 cannot be given.
representing the excess of working expenses over income in certain undertakings.

not appear in this return, as such undertakings have not been considered to be of the kind contemplated by the order of the House.

Proceedings *on the* 15th May, 1900.

After the preliminary formal business of the meeting,

The President delivered his Annual Address, and at its conclusion,

The Right Hon. G. Shaw-Lefevre said perhaps as an old colleague and friend of the President he might be permitted to move a vote of thanks to him for his very able and interesting address. He was quite certain it would meet with the views of all present, when he said that he could congratulate the Society upon having so eminent a man as its President. Sir Henry Fowler was a high authority upon the subject with which he had that evening dealt. He recollected some few years ago that he had produced an able and interesting document on the incidence of taxation throughout the country, especially in its bearing on towns. That was considered a text-book, and had proved to be of the highest value. He knew it was not the custom after a Presidential Address for any discussion to take place, or for any comments to be made either in the nature of agreement or disagreement, and for his part he should not think it right to depart from that rule or enter upon a discussion of the Address to which they had just listened. But there were one or two points to which, without entering on any discussion, he might perhaps be permitted to allude. One interesting part of the address was that in which Sir Henry Fowler pointed out the great expenditure on remunerative works. There were a large number of municipalities in this country which had acquired waterworks, gasworks, markets, tramways, electric light works, and docks and quays. A considerable proportion of the debt raised by these municipalities had been incurred for the purpose of purchasing these concerns. Now, looking at the subject from the point of view of London, he found that London was an exception to this rule. London did not own its waterworks, gasworks, electric light works, or its markets; it had no interest or concern in harbour works or quays, and it was only within the last two years that it had acquired an interest in its tramways. He was glad to think that that was in part due to himself, because when Parliament passed the Tramway Act in 1871, he caused to be inserted a provision enabling the local authority to resume possession of works on the roads on paying their actual value as constructed works; and in that way it gave an opportunity to local authorities in the future to resume possession of the tramways. It seemed to him that a tramway was in the nature of a monopoly of the road, which ought to vest only in the local authority. The London County Council had, during the last two years, succeeded in acquiring the tramways all over London, and in respect of half of London was now working them, and in respect of the other half had leased them to the existing companies. He rather thought that the Fellows would agree with the principle which had been laid down by Sir Henry Fowler, especially with regard to railways. Most of them would agree that in the main it was advisable that railways should be worked by private companies rather than by the State; but as regards tramways, he rather thought the President agreed that a different principle held good, and that it was wise and prudent that the local authorities should obtain possession of them and work them. For his own part he hoped to see the functions of the County Council extended so that London might acquire not only its tramways, but the waterworks and other enterprises. Of course this could only be done by a large expenditure of capital; but the whole debt of London was very small indeed in proportion to the debts of the great municipalities of the North. The Chairman of the Finance Committee of the London County Council had recently given an interesting comparison of the proportion of debt of London as compared with Liverpool and Manchester and other great towns in the North, and he informed them that whereas in London the total debt of all the different authorities amounted to little more than the annual rateable value, in the great towns in the North it was sometimes four, five, or six times the rateable value. The higher proportion of indebtedness there was arrived at by expending money borrowed for the establishment of municipal works of a remunerative character. It was possible therefore that a large increase in the same direction might take place in London without any addition to the burthens of the ratepayers.

Mr. Charles Booth said he had much pleasure in seconding the vote of thanks. There was one remark which perhaps he might be permitted to make, and that was of consolation to those who were afraid of the very large figures laid before them of the amount of the cost of different enterprises, namely, that their very amount was one of the reasons which brought such men as Sir Henry Fowler and others into the arena where these figures were dealt with.

The vote of thanks was then put to the meeting, and carried unanimously.

The President, in reply, said the greater part of his public life had been passed in municipal work—all, in fact, down to the time he went into Parliament, and, therefore, he might claim some little knowledge of what he had been talking about. It was his desire to see municipal institutions prosper, and as difficult questions were now coming to the front, he had selected this subject for his Annual Address, in order that such an audience as that before him might consider the matter. He did not wish to enter on anything controversial; his object was merely to bring before the public the importance of the questions concerned with municipal trading. He would emphasise the desirability of their being settled in a businesslike and statesmanlike manner. They should not be sacrificed to prejudice either on the one side or the other. He hoped that that solution would be reached which would be best for the community as a whole.

The DEFENCE EXPENDITURE *of the* EMPIRE. *By the* RIGHT HON. SIR CHARLES W. DILKE, BART., M.P.

[Read before the Royal Statistical Society, 19th June, 1900.
Sir ALFRED E. BATEMAN, K.C.M.G., Hon. Vice-President, in the Chair.]

As an old member of the Statistical Society, and as one of the few people who really enjoy statistics, I sin against the light in coming here to read a paper which will not be scientifically statistical. It is not my fault, it is the Secretary's fault, as everything is which happens in a Society. He, no doubt, likes an occasional popular subject, and I shall be destroyed accordingly by statisticians. I believe that once a distinguished politician was invited here to read a paper on the population of China, and that he was compelled by the nature of his subject to guess at his facts. That is not quite my position; but I shall have to complain of the inadequacy of the facts supplied to us, and of extreme difficulty in accurately ascertaining them: and I shall be compelled to some extent to deal in round figures.

In December, 1890, I read here a paper on the defence expenditure of the chief military and naval powers: and in any moral from figures which I may draw to-night, I shall have to allude to the discussion which took place on that occasion; a discussion in which, upon the invitation of the Society, Mr. Spenser Wilkinson, General Maurice, Major May (the distinguished author of the best book upon artillery), General Goldsmid, of the War Office, and others, were able to anticipate a good deal which the present war has now revealed to the British public at large.

Navy.

The expenditure of the British Empire, mainly a maritime power, the navy of which makes it a terror to the greatest of the military powers, and alone secures the freedom and the communications of the metropolis, is far greater upon its land than upon its sea forces. Our naval expenditure need give us little trouble, statistically speaking. We must bear in mind the fact which vitiates the statistics of nearly all books of reference, that the annual Estimates do not show the whole expenditure, and that there is much expenditure under Naval Works Acts. But there is little naval expenditure that is not shown on the accounts of the mother country. The contributions of the Cape, of Natal, of

India, and the payment by the Australasian colonies are all alluded to in the Navy Estimates, and I shall not trouble the Society to-night with matters which can be easily discovered in the Estimates themselves, so I merely mention them. The Indian figure has to be added to our expenditure. The direct naval expenditure of the colonies, not shown on Estimates as an appropriation in aid, is small, and even that of India is far from large.

The expenditure under the Naval Works Acts has never reached anything like the sum which has been anticipated in the yearly statements of the First Lord of the Admiralty and of the Chancellor of the Exchequer. It has been 900,000*l.*, 900,000*l.*, 600,000*l.*, 1,100,000*l.* in the years of which we have a complete account. It was probably greater last year, being estimated at 1,500,000*l.*; and is estimated to be infinitely greater still in the present year, namely, over $2\frac{1}{2}$ million £, though it will be two years before we shall know this year's figures for certain. The amount named by Mr. Goschen this year as the expenditure in the present financial year of the mother country on the navy is 30 million £ sterling; and we may add roughly a million sterling for naval expenditure of the Empire, including India, outside the mother country, making 31 million £ for the Empire; but it is possible that the actual expenditure will not ultimately be found to have reached 30 million £.

The exact cost of the Indian Marine to India is stated by the Royal Commission on the Administration of the Expenditure of India to have declined from a maximum of 798,000 Rx. in 1892-93 to 655,000 Rx. in 1896-97, the last year for which we yet have complete accounts.

In a debate on a comparison between the British and French navies, which lately took place in the French Chamber, it was stated by the speakers, who included the Minister of Marine and two ex-Ministers of Marine, that the expenditure on the British fleet was equal to that of the continental powers upon "the "fleets of Europe." So far as the effective fleets of Europe go this is nearly true. The avowed expenditure upon the French, Russian, German, and Italian fleets taken together falls slightly short of the cost of the British fleet; and outside those four Powers there is not much that counts in Europe, though the United States and Japan are first class naval powers, and although the South American Republics possess a few admirable ships, mostly from British yards. Austria-Hungary has an excellent navy for coast defence. The Dutch navy is chiefly for colonial defence, and is partly paid for by the colonies; and substantially speaking it is not far wrong to say that we spend on our fleet what the continent spends upon "the fleets of Europe." This fact illustrates the statistical difficulty, even as regards navies, of getting at the true relative expenditure of foreign countries. We count our non-effective expenditure. In foreign countries it is not easy to get at this, and if we turn to our ship-building vote, or our votes for new construction and for repairs of ships, we find that our expenditure instead of being equal to that of the continent, is equal only to that of France and Russia.

Military.

Army expenditure is far more complicated as well as infinitely more vast.

In what I say to-night I shall exclude the war. The title of my paper is "The Defence Expenditure of the Empire." The lavish expenditure which always occurs in war is abnormal. It is revealed in the statements of the Government at the beginning of the war, during the war, and at its close. The matters upon which the expenditure takes place are illustrated by much debate, and it is statistically more important, and nationally more interesting, to try to form a clear impression of the normal military expenditure of the Empire, in order that those who ultimately use statistics, statesmen and the constituencies, may see how our expenditure compares with that of other people, and what we get for our money.

The normal peace expenditure on the British army from home estimates, with the allowances from other departments in respect of military expenditure, is in round figures 24,030,000*l.* sterling; and the estimated expenditure from loan money in the year 1,085,000*l.*; and on barracks 76,000*l.* There is always a great difficulty in ascertaining what is the amount of expenditure on capital account which is covered, and what the amount on the same account which is not covered, by annuities charged on the Estimates. If we are not careful on this head we may count works expenditure or barracks expenditure twice over. The figures, however, which I have given are those which have been stated by the Chancellor of the Exchequer himself as being "exclusive of annuities charged on Estimates."

The expenditure of India upon Army is a matter far less definite and tangible. The estimated expenditure is always over 16 million sterling, counting the rupee at its average value, and generally over 17 millions. But while we might safely take the Indian expenditure in the present year, which is abnormally low, as being slightly under 17 million sterling, including pensions, if we count the rupee in this way, the question arises whether we ought so to count it. The British Treasury emphatically says No! The Treasury holds that the rupee spent in India is still worth 2*s.* there; and if the rupee is to be taken at that rate, then a large addition has to be made to the figure given. The total charge on the Indian revenues for Army is always over 25 million Rx. In 1896-97, the latest year for which the figures are complete, it was 26 million Rx. In 1895-96 it had been $27\frac{1}{4}$ million Rx. $4\frac{1}{2}$ million sterling is spent in England; and the rest in India in rupees. India has to pay over 2 million Rx. as exchange on the remittances to England for army services. There is a large margin between 17 million sterling and something over 25 million sterling, which would be the Treasury view of the Indian military expenditure; we shall have to keep a floating 8 million sterling or more in our recollection on account of this divergence. It is pointed out by the Royal Commission on Indian expenditure that the rupee has not for a very long time been worth 2*s.* At one computation it was worth 1*s.* 11$\frac{3}{8}$*d.*, and at another 1*s.* 10$\frac{5}{8}$*d.* before the recent fall, so that 2*s.* is in any case an over-estimate.

We have, then, to start with, of expenditure upon land forces, in round figures, 25,200,000*l.* sterling from British sources, which is voted or borrowed in the United Kingdom, plus 17 million £ sterling, or 25 million Rx., according to which computation is that on which we proceed. The United Kingdom and India spend annually and avowedly on military services in peace 50 millions, or over 42 millions, according to one or other of these sets of figures.

Here, however, comes in the curious fact that we spend a large amount of money upon military services through votes of the Imperial Parliament borne upon Civil Service Estimates. The Foreign Office have military forces in Uganda indistinguishable from forces paid for from Army Estimates in Central Africa, and wholly different in their nature from mere military police. They are commanded by army officers lent to the Foreign Office for that purpose. The Colonial Office have the West Africa Frontier Force, similarly disciplined and commanded, and the Under Secretary of State for Foreign Affairs and the Under Secretary of State for War have at various times informed the House of Commons, in reply to pressure exercised by questions, that it must be computed that the country maintains from 20,000 to 25,000 men, costing about a million a year; men who are paid for and money which is borne on Civil Service Estimates. The figures in detail are not yet very accurately ascertainable. The largest and most costly portion of our forces borne on Civil Estimates, the West Africa Frontier Force, is quite new, and although its strength is settled, its average yearly cost is not yet well known. We may perhaps judge of cost and results in numbers from the Niger Coast Protectorate Force, which has long been established, which is 566 strong, and costs 21,500*l.* a year. We come, therefore, to a figure of 51 million £ sterling, or 43 million £ sterling, on land forces, without counting the military expenditure of the self-governing and of the Crown colonies. The Crown colonies indeed repay a portion of our military expenditure, but the figures which are given in the Estimates are net figures, excluding Appropriations in Aid, and the colonial expenditure has to be added.

It is a question whether even when we have added colonial expenditure we have done enough. In the case of India strategic railways are charged to military expenditure. But the vast expenditure on the Uganda railway must be looked upon as in part strategic, and I am making no allowance for it. The services of the Egyptian Army, largely officered by British officers, must be looked upon as being in part available for the maintenance in the Soudan of a British supremacy in a British sphere of influence, and I am making no allowance for the cost of the Egyptian Army. Our real forces in the event of a serious war are also swelled by the levies of some British Protectorates under the Foreign Office, such as Zanzibar, of which again I take no account. I have tried to exclude everything that is intangible and take what is definite alone. But it is necessary to mention these additional forces and charges and to bear them in mind.

To begin with the colonies which make repayment to us of sums which we have not yet counted, I must first name Egypt, which, though not a colony, makes a payment directly towards the British army of 87,000*l.* a year. The Channel Islands also are not a colony, but must be counted. The military value of their militia as at present organised, and its cost, are both small. The military expenditure of Ceylon may be taken at 135,000*l.* a year, mostly repaid to us, but not, of course, already counted. The Straits, which, like Ceylon, though very rich, contribute to the military expenditure of the Empire on a much lower scale than does the poorer Southern India, spend on defence over 100,000*l.* a year, in addition to maintaining a large force of military police, the expenditure on which I shall not count, as it is difficult to see why it should be included as "military," and the Irish Constabulary excluded. Hong Kong contributes 52,000*l.* a year, which, like the contribution of the two last colonies named, is a recent reduction, and its military expenditure may be counted as being under 100,000*l.* a year. Mauritius repays 22,000*l.* a year, and does not get a very good article for its money, as we recently sent it a Central African regiment, which raided the place and had to be withdrawn. Mauritius cannot be said, however, to spend on military matters more than the sum repaid. The remaining expenditure upon military matters of Crown colonies, when we rigidly exclude police, is not large. There is a trifling payment from Malta, shown as an appropriation in our accounts. British North Borneo has a military police, which figured in the Jubilee, but which I do not count as "army." Cyprus police the same. There are some repayments by the West African colonies, but they are trifling when compared with money which we directly spend there. Neither can the West Indies be said to spend much on defence. They have been too long accustomed to rely upon the power of the Crown, although in the time of Cromwell the West India militia played a great part in the foreign expeditions of the Commonwealth. Taking an additional small sum for the colonies not specifically named, I set down half-a-million £ sterling as the military expenditure of the Crown colonies apart from that on military police.

This brings the cost of the land forces of the Empire up to 51½ million £ sterling, or 43½ million £ sterling (excluding the self-governing colonies). I turn now to the eleven self-governing colonies, which will give much trouble when we come to try to distinguish between what is properly military expenditure and what is properly police. Canada alone of the self-governing colonies is shown in the Army Estimates as making a direct repayment not yet counted. It is a sum of 21,000*l.* a year, set down as a Canadian contribution in respect of the arrangement recently made for Esquimalt. It is not easy to see why this sum should be counted as a Canadian contribution, and the Australian expenditure at Thursday Island and King George's Sound not similarly credited to Australia. No doubt, when the Commonwealth government comes into existence, a change will be made upon this score. With the exception of the garrison at Halifax, which we should retain even if we were not in the Dominion generally, Canada defends itself. Its defence expenditure is not large, and may be taken at under 350,000*l.* a year, if we exclude the mounted police of the North-West Territories. Newfoundland can hardly be said to possess an army, and we pass to the Australasian colonies. New South Wales may be said to spend on her military services a varying amount between 250.000*l.* and 300.000*l.* a year. New Zealand normally (*i.e.* in time of peace) spends less, and it is not easy to distinguish between her defence expenditure and her expenditure upon police. She has, however, a large force of volunteers. Queensland spends less again. South Australia has also but a small expenditure upon military purposes; and Tasmania also little, though she has a large force of volunteers. The Victorian expenditure upon defence is on a greater scale, and may be considered to amount to something under 200,000*l.* a year. Western Australia has a considerable defensive force in proportion to its population, and may be said to spend on defence about

20,000*l*. a year. It is difficult to say what sums should be counted as the defence expenditure of the Cape and of Natal. In the present year the direct expenditure of the South African colonies upon defence will be *nil*, inasmuch as we have taken over all their troops, and even their military police; but I am dealing with normal military expenditure, and in the total absence of knowledge as to what will be the military future of South Africa, I must take the past. Excluding the expenditure upon police, the expenditure of the Cape on land forces may be taken at 250,000*l*. a year; and that of Natal at 40,000*l*. a year, excluding the mounted police. The expenditure on land forces, apart from their military police, of the self-governing colonies, may be set at 1¼ million £ a year, bringing the expenditure on land forces of the Empire in a normal year of peace up to 52¾ million £, or 44¾ million £ sterling, and the total defence expenditure of the Empire up to 83¾ million £, or 75¾ million £.

The result of this gigantic expenditure is a magnificent fleet, probably at this moment the equal in war of the fleets of the Powers which control the northern coasts of Europe and Asia from Gibraltar to Behring's Sea. As regards land forces, the result of the enormous expenditure which has been named is less satisfactory. It yields to the Empire about a million of men, but without any common training, equipment, or command—a heterogeneous mass, out of which it is difficult to evolve more than two army corps in India for field service, composed of one-third white and two-thirds native troops; and, apart from India, the kind of force which we have placed in South Africa, amounting, on the whole, to over 200,000 men, but insufficiently supplied with artillery, and with the mounted branches generally, and wanting in solidity of organisation. The normal number of regulars is now about 220,000 out of India, and 72ire on aIndia, with about 80,000 reserve, and 90,000 militia. spend

Enormous as is the defence expenditura large 1 Empire—and certain though we may feel that any man oroount, ass, given the supreme control of such gigantic funds, woulcary," are a better result—we must regard it as certain that the es 52,0Cure will rapidly increase. The pensions for wounds and to widows, as well as gratuities and allowances of all kinds, will be swelled by the war; and the result of the war must also be to increase the costly mounted branches of the army beyond the figure of this year's estimates for peace or normal expenditure.

The rapid increase which has taken place in the last few years in the expenditure on the army has not been accompanied by anything like a corresponding increase in its strength. Up to last year there had been, taking the regular army, the reserve, and the militia together, no increase in that strength; and although there has been an increase since that time, it has been far from proportionate to the increase in the money spent.

In my former paper of December, 1890, I tried to show by a comparison between our own estimates and those of other countries, how far the absence of conscription ought to enter into the account. I showed that our volunteers, who formed as regarded Great Britain the larger portion of our nominal force, received no pay, and that the militia, serving only for a short portion of the year, are not highly paid. I examined all the items affected and not affected by conscription; and compared them with the similar items in the case of Germany and France. I am saved all necessity of arguing the point, because the present Chancellor of the Exchequer has summed up the controversy, to which he has evidently given much attention, in these words, which cannot be improved:—"Conscription enters into the account, but does not "at all fully account or even mainly account for the cost of our "army as compared with foreign armies." Pay, which is the item most largely affected by the absence of conscription, has not hitherto been a large item in our accounts. I say hitherto, because in the present year in connection with the war, and, therefore, outside and beyond the figures with which I am dealing, we have voted three millions of pay for a local force of 21,000 men, and are paying over 5*s.* a day to men performing the same duties as those performed by our own men for 1*s.* 3*d.* in the field. This is not normal, and is not therefore a portion of my subject, and I cannot but conclude the examination of the figures by using the words of the leader of the Opposition, himself, on the whole, a defender of our military system, that its cost is "appalling; but we are tied by traditions, prejudices, and habits "which it is hopeless to overcome."

If, without going too far beyond my subject, I may point to one of the causes of the vastness of our expenditure, I would allude to the reply made to me before this Society by General Maurice in 1890. Mr. Spenser Wilkinson, supporting me in the discussion, had argued, as I have argued now, and Colonel Maurice (as he then was), in answering him, alluded to the size of the British Empire and to its distances, and said that we must consider the area defended, and the cost of transport and reliefs. Now it would be easy to show that a large portion of the area in question is not defended in time of peace by the army, and defended, so far as it is defended at all, only by the existence of the British fleet and the power which it is known that it would give us in time of war. A small portion of this area, however, is occupied by tiny forces which cannot be said to constitute a very real defence. The small garrisons are one of the costliest portions of our system. It has been computed that Bermuda, if it were garrisoned by marines, would require but one field officer, and that under our military system it needs a staff of twenty-two. We are apt to reassure the House of Commons in critical moments of emergency by occupying some foreign station and asserting that it "commands" certain portions of the globe. In this way we occupied Wei-hai-wei: in this way we occupied Cyprus: and an examination of the cost of Cyprus from a military point of view, and of the efficiency of the defence afforded, would reveal the source of waste to which I allude. The garrison of Cyprus is one company. It spoils the battalion from which that company is drawn, and still more deteriorates the company itself. It involves detachments of at least four other bodies—the Army Medical Corps, with a field officer, the Army Service Corps; the Army Ordnance Corps, and the Royal Engineering Department. All these have to be periodically relieved, and passages paid from Army Estimates; and once a year a steamer has to be specially chartered for the relief of the company. There have to be army contracts in the island, payments to chaplains of various denominations for religious services, field allowances to officers in summer for going into camp, and all the masses of accounts which such a system must involve. If we ask what the Empire gets in return in the way of Imperial defence, the answer is that on the declaration of a really serious war, a naval force (which can ill be spared at such a moment) must be sent to take off the island a company which would otherwise be too likely to go as prisoners to the territory of a daring opponent, weaker than ourselves perhaps at sea, but glad to make a little raid upon an island which it would damage our navy to be tied locally to defend.

I have ventured to run the risk of being torn to pieces by real statisticians here to-night, because it is difficult to follow more accurately than I have given them the figures that have been brought together, on account of the complexity of estimates, and of the difficulties thrown by them in the way of compilers of books of reference. My hearers will probably be struck, in considering the matter as a whole, by the largeness of the contribution which is made by India towards Imperial defence, and by the comparative smallness of the contribution made in time of peace by the Empire outside India and the United Kingdom. The revenues of the British Empire raised beyond the narrow seas are now nominally far greater than our own. As a fact the other portions of the Empire include in their public expenditure much which in the mother country is paid for from local rates; and I should not myself be disposed to say that the revenue of the Empire outside the United Kingdom, is much larger than the true public revenue of the United Kingdom itself. But undoubtedly the contributions from that revenue towards defence are not substantial if India be excluded; and to take Ceylon, which is a near neighbour of Southern India, and, as I have said, more rich, the revenue of Ceylon is a quarter the revenue of India, while the defence expenditure of Ceylon falls far, indeed, short of any such comparison.

It must not, however, be forgotten that the self-governing colonies have made an immense contribution towards the present war. It is in respect of normal expenditure, with which alone I have been dealing, that the contribution of the colonies is small. New Zealand, Australia, Canada, Ceylon, and some of the other colonies have given blood and treasure without stint towards the South African campaign.

The deductions, other than the limited deductions already named, which are to be drawn from the consideration of the subject, are too strictly political for me to venture upon bringing them before this audience to-night.

APPENDIX.

COST OF BRITISH INDIAN DEFENCE. *East India. Financial Statement*, 1899 ; *Budget Estimate*, 1899-1900.

	1 In India.	2 Sterling Value of Col. 1.	3 In England.	4 Total (Cols. 2 and 3).	5 Exchange on Col. 3.	6 Total Rx. Charged on Indian Revenues, or, if the Rupee was equal to 2*s.*, Rx. = £ sterling.
	Rx.	£	£ stlng.	£ stlng.	Rx.	Rx.
Army services—						
Effective	15,960,800	Exchange $15\frac{3}{4}d.$ = 1 rupee	1,991,000	—	1,042,900	—
Non-effective	912,600		2,496,800	—	1,307,800	—
Warlike operations	38,900		5,300	—	2,800	—
	16,912,300	11,098,697	4,493,100	15,591,797*	2,353,500	23,758,900
Buildings and roads—						
Military works	1,299,600	852,863	14,900	867,763*	7,800	1,322,300
	—	—	—	16,459,560*	—	25,081,200
Marine (including river navigation)—						
Imperial	158,200	—	—	—	—	—
Provincial	193,000	—	—	—	—	—
	351,200	230,475	226,500	456,975*	118,700	696,400

* These figures are at the depreciated rate of the rupee.

The Chairman (Sir Alfred E. Bateman, K.C.M.G.) presented the Silver Guy Medal to Mr. R. F. Crawford for his paper on Food Supply. Mr. Crawford, he said, was a very efficient member of the Board of Agriculture and, although they did not, generally speaking, associate experts in agriculture with experts in statistics, there were no statistics in this country better compiled, or on a clearer or more scientific method, than those prepared by the Board of Agriculture. This might especially be said of the annual volume of "Agricultural Returns" lately issued. In the preparation of those returns Mr. Crawford took an important part. They knew him to be a real expert in statistics, and he had great pleasure in presenting Mr. Crawford with this medal, founded in memory of Dr. Guy, for his excellent paper, "Notes on the Food Supply of the United Kingdom, Belgium, France, and Germany."

Discussion *on* Sir Charles Dilke's Paper.

The Chairman (Sir Alfred E. Bateman, K.C.M.G.) said he had been asked to take the Chair on that occasion, although, or perhaps because, they knew he would not be able to take any part in the discussion, as the figures trenched too closely on the attributes of other departments for it to be proper for him, as an Official, to discuss them. There were, however, a good many experts present who would elucidate the various points, and no doubt produce an interesting discussion.

Mr. Spenser Wilkinson said he was not sure whether Sir Charles Dilke was quite correct in saying that it was not right to talk about the cost of war when discussing the cost of defence. He did not mean that the cost of a war like that now going on should be added to the annual cost of the army, but when taking into consideration the general cost of the defence of the Empire, he thought they ought to bear in mind the amount of money being paid as interest on money borrowed to expend in previous wars. The purpose of the whole expenditure being the security of the Empire, they ought not to forget that to the same account went a very large amount of what was spent from the taxes in the shape of interest on money spent in previous wars, and that would make a very considerable addition to the figures. With regard to the general question raised, rather implicitly than explicity, there was a little difficulty in getting at the *data* required. Roughly speaking, as they had been told, they spent about 80 million £ on defence; 30 million £ for the navy, 25 million £ for the home army, and 25 million £ or less for the Indian army. Then they were told that this was an enormous outlay, and that very likely competent business men would get more for the same money, a view in which he entirely agreed. But before that point could be settled, there were several other questions on which they would like to have statistical light. First of all, was it not the case that they must not look at the annual money outlay alone? that in almost every department of British expenditure we spent more money than other nations for the same result; that the actual money cost was greater owing to our greater riches? It was well known that for an ordinary person the income which would amply suffice for a good many foreign capitals, would not go half as far in London, and did not the same thing apply to our military expenditure? We spend, say, 25 million £ on a certain number of soldiers; that might be more than a given foreign Power would spend on the same number of men; but was it reasonable to assume that we could produce the result for the same money cost that a continental power could, where every item of living was on a different scale? It was a question to be carefully considered in discussing whether we were more extravagant than other people. There was also another difficult question. Was there any nominal standard of what ought to be spent on defence? The opinion of a distinguished statesman had been quoted to the effect that the amount of expenditure to which this country was committed was appalling. He could understand that as an expression of political opinion, but the real question was, what was the proper expenditure for an Empire like ours? Was this expenditure to be regarded, as no doubt a few years ago it was very generally regarded, as expenditure on a luxury, or as a necessity? In his opinion the expenditure on the means of defence was an absolute necessity, and it was exceedingly difficult to decide what was a reasonable amount to be spent on such a prime necessity. If he might, as an outsider, make a suggestion, it would be that the Statistical Society might throw a good deal of light upon this question, if some eminent student of figures would draw up some kind of estimate, going back through several centuries, and taking the several Powers, of what had been the average proportion of income that the nations spent on preparation for defence. He thought it would always be found to be very large, at all events in the case of those States which had been able to defend themselves. Again, with regard to the effect of conscription on the cost of an army: he had always been struck with a certain flaw in the view of those who said that conscription was an enormous economical burden. That seemed to him to be very doubtful. The economical burden laid on a country by the maintenance of an army consisted in two things—partly in money spent in feeding and clothing the army, and this point was really not very much affected by conscription. The burden lay in the fact that a certain number of men were withdrawn from productive labour, and the difference came in in this way. In the system of compulsory short service a certain number of men were every year temporarily withdrawn from productive labour, and after a short time—it used to be on the continent after three years, but now it was after something less than two years—those men returned to productive labour with, as far as could be ascertained, their productive powers practically undiminished. But where there existed a comparatively long service like our own, although a less number of men in proportion were withdrawn from productive labour, they were kept so long that they could not be returned as effective productive labourers in the labour market, and to that extent their productive power was crippled. We took perhaps 30,000 recruits a year, but did not return the bulk of them for seven or eight years, and, as far as he could gather from observation and inquiry amongst employers, the general opinion was that a man who had been seven or eight years in the army never would be as valuable as a producer as the man who served for only two years in one of the foreign armies where there was compulsory service. That was an aspect of the case on which possibly the Society might throw a great deal of light, and one which ought to be borne in mind in all discussions such as might arise in the next few years as to the relative value of our own voluntary system and that system of more general service which prevailed on the continent.

Sir JOHN COLOMB, K.C.M.G., M.P., said he was always very much attracted by a speech or a paper on this subject from his friend the author, who was always interesting, instructive, and suggestive. The difficulty he had complained of in dealing with that part of the subject which had been discussed that day was very real; there was great difficulty in ascertaining the real solid statistical facts. When talking about expenditure, one ought to think where the money was to come from, and thus one was inevitably brought to consider the question of revenue. Sir Charles reminded them of the growth of expenditure on defence, and he looked forward, as they all must look forward, to a steady increase in that expenditure. They might look forward to getting more for their money, but he doubted very much if they could look forward to getting what they wanted for less money. The question of revenue was a point to which he wished to draw the attention of the Statistical Society. As Sir Charles Dilke had shown, the burden of this expenditure was mainly borne by the United Kingdom. He had pointed out the growth of the expenditure, but he had not alluded to the fact that the revenue of the United Kingdom was in no way expanding in any proportion to this inevitable increase of expenditure. Looking at the Empire as a whole, and on the measures necessary for its defence, they were bound to look at the means of meeting that expenditure by reference to the resources of the Empire as a whole. Attention had been very properly drawn to the difficulty of making a true comparison between the revenues of the outlying portions of the Empire and that of the mother country. He would take the best figures he could obtain with regard to revenues, from an able paper of Sir Robert Giffen at the Colonial Institute in February, 1899, and would quote the figures he gave. Taking the period from 1871 to 1897, he showed that the increase in the revenue of the United Kingdom was 52 per cent., whilst grouping the self-governing colonies together the increase in the same period was 185 per cent. Then taking the Crown colonies and miscellaneous territories the increase was 95 per cent., and the growth of the revenue of India was 83 per cent. One could not look at those figures without recognising the broad fact that, if naval and military expenditure was for the benefit of the whole Empire, a state of things could not continue which practically threw the whole cost of defence on that part of the Empire which had the least increasing revenue. That was the problem which, he took it, they had to face. Applying that to the paper, it worked out in this way: taking the figures of revenue from Sir Robert Giffen, and the figures of expenditure from the present paper, he found that the aggregate expenditure of the whole Empire on land and naval defence as compared with the revenue was 32 per cent. on one set of figures, and on the other set 29 per cent. Taking the question of naval defence, there was no portion of the Empire which was not equally concerned in the security of the sea. One could not differentiate between the various countries. Their future prosperity, and even existence, was bound up with the maintenance of British supremacy at sea, which meant simply freedom of communication with the outside world, and freedom of internal communication between all parts of the Empire. But, although the interests were identical between all parts of the Empire, the United Kingdom spent on the maintenance of the naval supremacy 28 per cent. of its revenue, whereas the outlying portions only spent 0·6 per cent.; that could not go on. The military expenditure was 23 per cent. of the revenue of the United Kingdom, but in the outlying Empire it was 18 per cent. The curious fact was this: that the primary condition of naval supremacy was not recognised, and it was to this matter he wished to draw attention. Sir Robert Giffen stated that the aggregate revenue of the Empire was 257 million £ sterling for 1897, and the revenue of the United Kingdom was 106 million £. It was perfectly true that the growth of military expenditure was great, but any increased strength they got was not in proportion to the growth of cost. They had for a long time been acting upon a false assumption as to the meaning of sea supremacy. They were appropriating a huge portion of the army to a purpose which was inconsistent with the main doctrine of sea supremacy as a necessity. They had created vast works and fortifications on the assumption that they would be attacked by powerful fleets in the exercise of their perfect freedom. If they analysed the army estimates, they would find that we crippled the army by locking up great military garrisons at naval ports, and were thus spending money which ought to go in providing for field service. We wasted on the false naval assumption that the enemies' fleets would be free to go and attack where they liked, and that no place was safe from the attacks of foreign fleets. The fact that the expenditure was growing, without our getting correspondingly increased power of putting troops into the field, arose from this misapprehension of what naval supremacy meant. This system was organised at a time when the conditions of naval war were not understood. What this false action cost was a matter on which they wanted more statistical light. He considered that this paper was not only most valuable, but most suggestive, because it opened up questions which must receive the attention, not only of the United Kingdom, but of the whole Empire, if they meant to have a really economical and true system of defence, and one which would stand the strain of a great war.

Mr. GEORGE HOWELL asked where the means to pay for this increased expenditure was to come from. They talked a good deal about the defence of the Empire, as though the existence of England as a great trading nation depended upon it; but looking back to some statistics which had been published by Sir Robert Giffen, from the year 1854 until the present time, it appeared that the proportionate increase of trade with the colonies had been *nil*, and that, in point of fact, the proportion as between the colonies and the whole of our British possessions in comparison with foreign countries had rather gone back than otherwise. In 1854 our gross imports were 77·6 per cent. from foreign countries and 22·4 per cent. from the colonies; from 1895 to 1898 they were 78·5 from foreign countries and 21·5 from the colonies. Taking the gross exports, in 1854 they were 64·9 to foreign countries and 35·1 per cent. to the colonies; and in 1895 to 1898, taking the last four years for which the figures were available, they were 66·1 to foreign countries and 33·9 per cent. to the colonies, showing a decrease both as regards imports from the colonies and exports to them. This did not indicate that the enormous expenditure we had undertaken with regard to the British Empire was increasing our British trade with the colonies in proportion to that with foreign countries. This was a point from which the question ought to be viewed, especially when so much was said about increasing our trade with the colonies, and possibly setting at defiance foreign countries, which were really our best customers.

Sir ROBERT GIFFEN said he had come to be instructed by Sir Charles Dilke and the military experts on a subject which must be of great interest to all, without any intention of taking part in the debate, but as it happened that Sir John Colomb and the last speaker had referred to him, there were one or two points on which he should like to give an explanation. Sir John Colomb's comparison of the expenditure on defence of the United Kingdom, with the expenditure of the Colonies and British possesions, seemed to him to point to an idea which was rather prevalent, that in some way or other the various portions of the Empire should be made to contribute more than they did to our common defence. In regarding this question, however, account should be taken not merely of the total revenue of the various parts of the British Empire, but of the actual ability to contribute. He believed that a great many of our possessions raised a considerable revenue for purposes, as Sir Charles Dilke hinted, not quite analogous to the purposes for which money was spent in the United Kingdom. The sum they raised altogether was thus not a measure of the contribution they ought to make for a common purpose. With regard to their payments for military defence, some were obviously paying very little, and others, like the United Kingdom and India, a great deal, though it would be most difficult to say what each should contribute if a separate account were taken; but as a practical question he could not say that he approved altogether of the ventilation of this idea. Some of our self-governing countries had been going on in a certain groove with their expenditure, flourishing under the British flag and not thinking of a great many questions such as we had had to think of at home. If one suddenly came down on them and told them there was this great expenditure incurred by the British Empire, and that they ought to contribute a part of it, however theoretically right that might be, one would certainly raise a political question of the first magnitude such as was raised in connection with the American Colonies a century and a quarter ago, and which led to their separation from the British Empire altogether. Before raising a question of that kind, there ought to be some great necessity indeed pressing on the United Kingdom; they ought to be feeling the burden of military and naval expenditure in a very serious manner, and that it was a matter of life and death; and only then they might fairly appeal to their British possessions to assist them. This brought them to another question, which Mr. Spenser Wilkinson had very properly raised, namely, what was the measure they ought to use in regulating their military and naval expenditure? He thought one answer to that question was, that in spite of the magnitude of these figures, they could not say that the burden of military and naval expenditure on the people of the United Kingdom was so very serious that they ought to seek to be relieved of it by going to other parts of the Empire. After a thorough study of the expenditure on the part of other countries, he had come to the belief that instead of spending all they could do, and that they might do if occasion should arise, they really were spending a very small sum for the insurance of the British Empire against its possible enemies. The sums spent by the United Kingdom were between 55 million £ and 60 million £ sterling for the army and navy, and the figure with which they had to compare that was the aggregate income of the people of the United Kingdom and their aggregate property. They were all acquainted with Mr. Bowley's recent studies on the subject, comparing the present with former times, and there could be no doubt that at this moment the aggregate income of the people of the United Kingdom was between 1,500 million £ and 1,600 £ sterling per annum. The national expenditure on the navy and army was about one-thirtieth part of that sum, and not 5 per cent. of it. Was that too much or too little? It seemed to him, considering all the advantages of belonging to an Empire like that of Great Britain, if it was necessary to spend so much, the money ought not to be grudged. It was not really an extravagant sum. The question to be debated was, what were the particular occasions on which naval and military expenditure would be necessary, and it might be a wise economy to spend that amount rather than neglect what was necessary. In a war such as we were now engaged in in South Africa we spent

100 million £ sterling in a very few months, whereas if we had spent perhaps 3 million £, or 4 million £, or 5 million £ sterling beforehand, and had had a properly equipped army ready to take the field, the greater part of that 100 million £ might have been saved. These, of course, were questions for military people, but he did not think they should attempt to shift the burden on to the other parts of the Empire. And he should like to add to that, that there was one part of the Empire which was not exactly in the same position as the rest, and where the question was of a more serious kind. He asked whether India, by the arrangement which existed, was not made to pay more than her proper share. It would seem from the use made of Indian troops that the force which existed in India was not merely useful for the defence of India itself, but was also useful for the defence of the whole Empire. In that case the subject ought to be reconsidered, at least as far as India was concerned; and if it were taken up at all, it should be from a point of view of that kind, and not from the point of view of relieving the United Kingdom of any part of the expenditure which it now incurred.

Mr. H. Seymour Trower said he would only remind the meeting of what, as Sir Charles Dilke had stated from his place in the House of Commons, was the best possible formula for the proper measure of our naval and military expenditure: Sir Charles had said that he would spend "enough to make us safe."

Mr. C. McL. McHardy said that one thing which struck him in the discussion which had taken place with regard to the enormous increase in our expenditure on defence, was that they had not sufficiently considered what an enormous increase had taken place in the necessity for our army and navy. The protection of our Empire depended both on our sea forces and land forces, but mainly on the former. Looking at our sea forces first, and going back to about 1805, it should be remembered that at that period there were no other navies to contend with us. In 1793 we had a very small navy compared with what we now have, but relatively to the navies of other nations very large compared with what our navy at the present time is. In 1793 we sent our ships out against the enemy; we captured their ships, refitted them, manned them by means of the press-gang, and used them in our own fleet. Probably they would recollect the fact that exclusive of 903 privateers, we captured 570 of the enemies' men-of-war between 1793 and 1801. The war was resumed in 1803; and again in the next few years we captured nearly 600 more. On each of these occasions the vessels were carrying about 16,000 guns, so that we captured vessels carrying about 32,000 guns. That helped us considerably, without involving any correspondingly increased cost for the construction of additional ships for the navy. That mode of cheaply increasing our naval strength was no longer open to us, since in attempting to capture the enemies' ironclads we should probably sink them; and even if they were brought into port, their damages would not be capable of repair during the probable period of a modern naval war. If we compared the relative strength of our navy now with that of the navies that might be brought against us, and remembered at the same time what our navy was in 1815, when there was not another navy at all to come against us, it would be seen that we were very deficient in battleships and cruisers at the present moment, and that, notwithstanding the heavy expenditure on new construction in recent years, our navy now, relatively to the navies we might have to contend against, was much inferior to what it was in the time of Nelson. The sea force for the whole Empire must be under one control, because the battle which would be fought by our sea forces for the protection of any one part of the Empire—say Australia—would probably be fought some thousands of miles away from it. At the commencement of hostilities, notwithstanding that we might immediately blockade our enemy's ports, there would be some of their ships outside those ports, and they might make a raid on any of our harbours, such as Liverpool, Sydney, Adelaide, or Halifax; therefore a certain amount of protection by land forces was required at such places. The colonies might very well take care of their own land forces, provide their own earthworks, guns, batteries, magazines, and local troops for their own defence, and retain entire control over the expenditure and the management of them, the central authority in London being kept fully informed as to the provision made by them. But when it came to the navy, it seemed reasonable that all parts of our Empire should, on some uniform basis, make a contribution to one navy under one central authority for the protection of our ocean highways, our commerce and ships on the oceans, and the service of the Empire generally. He agreed with Sir Robert Giffen that we did not want to raise the question or to ask our colonies to do this; nevertheless they might know that we were pleased to accept their assistance. He referred to the contribution of 30,000*l.* a year recently offered to us by the Government of the Cape of Good Hope, an amount equivalent to the interest at 3 per cent. on the cost of a battleship, and remarked that though we were grateful for this, we did not take so much notice of the previous action of Canada in giving more than the equivalent of 400,000*l.* a year by admitting our imports on preferential terms over those of other countries. The increase of our commerce with Canada has been very appreciable since that arrangement came into force. Allusion had been made by Mr. Howell to the fact that our commerce with the colonies was not increasing; but he thought that if the other colonies contributed in a similar way, we should soon have an appreciable increase of commerce with them, and thereby a contribution on a uniform basis from all of them towards the cost of an Imperial Navy.

Mr. NATHANIEL L. COHEN referred to a remark of the first speaker, who adverted to a certain supposed disability which he said attached to soldiers when they returned to civil life. The speaker was associated some fifteen years ago with the foundation of a Society for the special purpose of finding employment for soldiers belonging to the reserve when they left the Colours, a

Society which had now eighty-four branches throughout the country. This Society certainly only took cognisance of those who had fairly creditable records during their years of service, but he could affirm that last year, before the commencement of the South African war, and before the reserves were called out, the Society had from employers many more applications for men than it could supply. This circumstance was no doubt partly due to the activity of trade at that time. But they also had a large number of letters testifying to the entire satisfaction of employers with the men sent by the Society. The Society of which he spoke found employment last year for some 7,000 men, and he thought that so far from service with the Colours for five or seven years being a disqualification for subsequent civil employment, in the generality of cases (he was speaking especially of the unskilled or half-skilled trades) the habits of discipline, method, and regularity which were acquired under military service, were surely rather helpful to civil employment.

Mr. H. F. Wyatt pointed out that Sir Robert Giffen had shown that the expenditure on defence represented less than 5 per cent. (less than 4 per cent. in fact) of the national income, and the question then surely followed whether the result of that expenditure was adequate or inadequate to the safety of the Empire? The point to which he desired to direct attention was that it was quite impossible to arrive at any decision on that matter, as there existed no authority to which they could refer. The Estimates did not even pretend to represent the actual needs of the British Empire, and there was no human being who could be fixed with a real responsibility, involving his name and reputation, as to the adequacy or inadequacy of the national expenditure for defensive purposes. This was not a novel point. It had been brought out with supreme force in books by Mr. Spenser Wilkinson, and had been strongly urged by Sir Charles Dilke himself, but it remained undealt with and unsettled. Until it was dealt with satisfactorily, the whole of the inhabitants of the British Empire were living in a fool's paradise, and did not know whether they were safe or not. There existed at the present time one organisation only that had taken up that point as its admitted object. That was the Emergency Committee, of which Colonel Sandys was Chairman. Their object was to insure that the Commander-in-Chief of the Army (and, *mutatis mutandis*, the same thing might be made to apply to the First Lord of the Admiralty) should draw up a memorandum, which should be laid on the Table of the House of Commons once a year, stating what were, in his opinion, the military needs of the British Empire. If that were done, they would have for the first time an authoritative statement as to what was wanted. Everyone would know where he was and how to act if the Government did not do what was said to be requisite. Sir Charles Dilke, in the Paper, said: "Enormous as is the defence expenditure of the Empire—and certain though we may feel that any man of business, given the supreme control of such gigantic funds, would produce a better result—we must regard it as certain that the expenditure will rapidly increase." They must all desire that the expenditure should be so dealt with, as it would be dealt with by any man of business capacity, to insure that the organisation of the country for defence should be on business lines, but he believed he was correct in saying that the way in which the estimates for military defence were framed was to take an average (leaving out special expenses incurred on account of the war) of the last three years' Estimates, and the Estimates were drawn on the lines of the sum of money thus reached. The Commander-in-Chief or a dozen other officers might, or might not, be consulted by the Secretary of State for War, but it remained with him, a civilian, to be supreme arbiter on the defence of the Empire, and, subject to the interposition of the Treasury, to see how the money should be applied.

Sir Charles Dilke, in reply, said the discussion had naturally gone a little wide of statistics, but he should try in the short time at his disposal to deal mainly with the statistical or semi-statistical points which had been raised. Mr. Spenser Wilkinson, in his most suggestive remarks, had argued that some portion of the debt must be considered, statistically speaking, as a portion of defence expenditure, and he quite agreed with him. At the same time it must be remembered that that evening he had been looking to the expenditure which produced for its result in some definite form tangible measures of defence. From that point of view the amount of debt expenditure to be considered was only very small. The cost of fortifications alone would at once occur to one as a debt expenditure which must be taken into account, but that he had done in speaking of the Naval and Military Works Act of each year. The expenditure on the Portsmouth fortifications and some matters of that kind, made before the recent Naval and Military Works Act, had now almost ceased to produce any tangible result on national defence, from the necessary changes which had occurred in course of time. Then Mr. Wilkinson asked how far other Powers spent all round more for the same results than we spent, and how far any apparently disproportionate expenditure for military purposes must be considered as being involved in that general higher scale of expense which existed in the United Kingdom. There was, no doubt, much in that view. At the same time he would point to the fact that in the navy we did obtain a larger return for the money we spent than any other Power. There were also sets-off. We were a country where many materials were very cheap. We obtained even for the army our food and forage at a lower rate than did many of the other countries. While undoubtedly countries like Russia and Japan obtained far more for the same money in every branch than we did, it was not completely true as regarded Germany and France. Undoubtedly, as regarded naval construction, we obtained our ships for an infinitely smaller sum than was expended by France or Germany or any other Power. We undoubtedly got the actual material of our ships so much more cheaply than other naval Powers, that the fact that we spent rather more on wages in proportion to the numbers of men employed, by no means turned the balance the other way, and our navy was perhaps the cheapest in the world. Mr. Wilkinson also asked what was a proper expenditure on our part for defence, and Sir Robert Giffen mentioned two or three considerations bearing on this subject. The view with which he began and ended the Paper was one which should be borne in mind. The maritime character of our Empire, the situation of the metropolis, and the heart of the Empire would suggest a larger proportion of our expenditure should be upon naval defence, and presumably a smaller portion of it on land defence than was the case at present. It was very difficult, statistically speaking, to establish any criterion of what should be the defence expenditure of an Empire such as this, but he did think that the statistics they had gone into lent some colour to the view, that the relative expenditure on the army and navy was not what it should be in an Empire of this kind. Sir John Colomb on that head and many others had helped his argument. With regard to colonial expenditure Mr. Howell had raised that question. In the earlier parts of his own remarks Mr. Howell asked how far the existence of the Empire as it stood depended in any way upon its naval and military expenditure, and tried to show that our trade with foreign countries was greater and had increased more rapidly, taking certain years, than had the trade within the Empire. He (Sir Charles Dilke) could not see how the fact—supposing it was a fact—which Mr. Howell asserted produced the conclusion he seemed to draw, that our military and naval expenditure was either altogether unnecessary or might safely be diminished. Our trade with certain foreign countries was undoubtedly enormous. Not to speak of our trade with France in food, he might refer to South America, which was more comparable with our colonial trade, and where our trade was really gigantic. It appeared to him that whether the trade which had to be protected was concerned with our colonies or South America the arguments for defence remained unaffected. Sir Robert Giffen put in a very necessary caution, no doubt, with regard to calling upon other parts of the Empire to contribute towards defence, but he thought he pushed that point a little too far when he suggested that the American Colonies had been lost by the mere policy of asking them to contribute towards the defence of the Empire as a whole. Historically speaking he was disposed to think that the doctrine of the wisdom of such a contribution was admitted by the thirteen colonies, and that Franklin himself, in the proposals which he put forward at the conference of those colonies which was called on that subject, was on sound American ground, and that the dispute and the war which followed were caused not by the principle, but by the want of tact with which the principle was applied. Sir Robert Giffen had asserted the sound view that they ought to take account of the ability to contribute. Undoubtedly we ought to do so, and he had tried to point out or to hint that, even putting aside the very delicate question of the self-governing colonies, in the colonies which were entirely within the control of the Government of the Mother

Country, the Crown colonies of the most severely autocratic type, and in India, there were such enormous discrepancies, that the matter was worth attention. Sir Robert Giffen admitted this, and desired a decrease of the contribution from India. What had been done, however, in the last few years had not been to decrease the contribution of India, but to decrease the contribution of several of the Crown colonies. That fact in itself he was sure would be felt as a reason why the matter should be statistically considered. Sir Robert Giffen went on to say that the burden upon us of our defence was not at present, considering it as an insurance, a very large sum, but that considering it in proportion to the income it was very small indeed. The Chancellor of the Exchequer recently made a speech on this very point to his constituents, and took exactly the opposite view to that of Sir Robert. He said the amount of the defence expenditure of the United Kingdom had now become a very serious question, and indicated his own view that it was difficult that that expenditure should be increased. He thought the most valuable service in respect of this matter that the Statistical Society could perform would be to show through the Empire, country by country, how small was the expenditure on the fleet as compared with the expenditure on the military services, because that was a fact people had not got into their minds. His own view was that if Sir Robert Giffen was held by Parliament and by the Government to be wrong, they ought to try and get into the public mind the fact that the enormous expenditure was not that on the fleet, which gave them such tangible results, but on the land forces, from which the actual result was far less tangible. He hoped the Paper might be of some use in inducing people to study the figures for themselves, and to follow this Paper up by some statistical contribution on like subjects on future occasions.

The CHAIRMAN proposed a cordial vote of thanks to Sir Charles Dilke for his Paper, and this was carried unanimously.

MISCELLANEA.

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I.—*On the use of Auxiliary Curves in Statistics of Continuous Variation.* By W. F. SHEPPARD, M.A., LL.M.

PART I.

Data arranged by Equal Divisions of a Scale.

Introductory.

1. THE cases to be considered are those in which a magnitude, whose value we shall denote by X, varies continuously within a limited or an unlimited range, and the relative frequencies of different values of X are found by dividing the range into equal intervals *h*, and counting the number of individuals in each of the classes so determined. The following may be taken as examples:—

EXAMPLE 1.—*Southampton Barometric Heights.**

Height to nearest Tenth of an Inch.	Number.	Height to nearest Tenth of an Inch.	Number.
Inches.		Inches.	
28·5	1	29·9	548½
28·6	2	30·0	602½
28·7	2	30·1	619½
28·8	4	30·2	500
28·9	8½	30·3	382
29·0	13½	30·4	237½
29·1	21½	30·5	189½
29·2	37	30·6	88½
29·3	79	30·7	43½
29·4	108	30·8	7
29·5	181½	30·9	4
29·6	254½	31·0	1
29·7	348½		
29 8	463½	Total...............	4,748

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* "On the Distribution of Frequency of Barometric Height," by Karl Pearson and Alice Lee. *Phil. Trans.*, series A, vol. 190 (1897), p. 428.

EXAMPLE 2.—*Heights of American-born Whites.**

Height.	Number.	Height.	Number.
Inches.		Inches.	
Under 61	1,674	69—71	64,591
61—63	9,871	71—73	25,500
63—65	36,989	Above 73	6,388
65—67	76,157		
67—69	94,450	Total................	315,620

* *Statistics, Medical and Anthropological, of the Provost-Marshal-General's Bureau*, compiled by J. H. Baxter. Vol. ii (Washington, 1875).

EXAMPLE 3.—*Mortality Table* (127,283 *Births*).*

Age.	Deaths.	Age.	Deaths.	Age.	Deaths.
0—1	14,358	55—56	1,414	96— 97	34
1—2	3,962	56—57	1,475	97— 98	18
2—3	2,375	57—58	1,541	98— 99	10
3—4	1,646	58—59	1,612	99—100	5
4—5	1,325	59—60	1,682	100—101	3
&c.	&c.	&c.	&c.	101—102	1
				Total........	127,283

* *Institute of Actuaries' Text Book*, part II, pp. 494, 496.

EXAMPLE 4.—*Degrees of Cloudiness at Breslau*, 1876-85.*

Degree.	Number.	Degree.	Number.	Degree.	Number.
0	751	4	46	8	194
1	179	5	9	9	117
2	107	6	21	10	2,089
3	69	7	71		
				Total........	3,653

* Quoted by Karl Pearson, in *Proc. R. S.*, vol. 62, p. 287.

In the first of these examples the classification is complete, the whole range of variation (which possibly extends below 28·45 in. and above 31·05 in.) being divided into equal intervals of 0·1 in.; and the distribution of frequency is of a kind which is now very familiar, there being one value of maximum frequency (known as the modal value), and the frequency diminishing continuously as we recede from this modal value towards the extremities of the range. In the second example the classification, as is too often the case, is incomplete; the range from 61 in. to 73 in. is divided into equal intervals of 2 in., but no information is given as to the distribution of the 1,674 heights at one end of the range, or the 6,388 at the other. But an inspection of the figures as given, and a comparison with similar data elsewhere, lead us to conclude that the distribution is of the same general character as that exhibited by Example 1. In both these cases, therefore, the figure of frequency (*i.e.*, the figure whose area between ordinates corresponding to selected values of X as abscissa is proportional to the number of cases in which X lies between these values) is a figure bounded by a curve whose extreme ordinates are indefinitely small. In the third example the figure of frequency is also of this character at the upper extremity; but as we approach the lower extremity (corresponding to $X = 0$) the successive areas increase, instead of decreasing, so that the figure is bounded at this extremity by an ordinate which is very great, and may be practically infinite. Finally, in the fourth example the figure of frequency is of this latter character at both extremities. The position of the bounding ordinates, however, in this example, is not known. The observations are grouped in eleven classes; the nine inner classes may be supposed to be formed by constant increments of unity in X; but we cannot be sure that each of the outer classes also corresponds to a unit of the scale. The uncertainty existing in this case is similar to that existing in Example 2, where we are ignorant of the distribution of a number of observations at each end of the scale.

It may be noted here that there is a certain difference in kind between the data in Example 3 and those in the other examples. These latter represent actual observations; but the figures in Example 3 (from $X = 10$ onwards) are obtained by combining various sets of observations, and smoothing the results. This process eliminates errors of random selection, while possibly introducing errors of a different kind. The figures may, however, for the purpose of illustration, be taken as giving the distribution of deaths in some actual set of 127,283 persons.

2. The first problem which we have to consider, in reference to any such data as the above, is that of *interpolation.* This may be either *direct* interpolation, *i.e.*, to find the most probable number of individuals for which X is respectively less and greater than a certain value; or else *inverse* interpolation, *i.e.*, to find the most probable value or values of X corresponding to a certain numerical classification.

Allied to the question of interpolation, and perhaps included in it, is that of *extrapolation.* This question only arises when the classification at the extremity of the scale is incomplete. Thus, in Example 2, the problem is to classify the 1,674 individuals at the one end of the scale, and the 6,388 at the other, by means of the given classification of the remaining 307,558. Similarly, in Example 4, the primary problem is to determine the exact position of the ordinates bounding the extreme classes, of 751 and 2,089 respectively, by means of the given distribution of the remaining 813 (a problem which is by no means easy,[1] since these latter form less than one-fourth of the whole number); and then, having found the position of these ordinates, we require a more exact classification of the numbers in the two classes.

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[1] The difficulty is aggravated by the obvious irregularity at the upper extremity of the scale, due to faulty observation; but this irregularity is only incident to the particular example.

The second problem is to determine the ordinates of the curve of frequency. These are mainly required for the purpose of drawing the curve; but they may be important for other reasons. In Example 3, for instance, the ordinate represents the absolute rate of mortality of the particular individuals considered; and its ratio to the number of survivors of that age gives the relative rate of mortality.

3. For dealing with these two problems we have to present the data in a different way. Let Z denote the ordinate of the figure of frequency, corresponding to the value X, and let A denote the area of the figure, measured from the lower bounding ordinate up to Z, the whole area of the figure being unity. Then the numbers in any one of our tables are the first differences of the values of NA corresponding to successive values of X, where N is the total number of observations; and the values of NA are found by successive additions of these differences. Thus Examples 1 and 2 become:—

EXAMPLE 1.

X.	NA.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.
Inches.		+			
28·45	0		+ 1		− 1
		1		0	
28·55	1		+ 1		− 1
		2		− 1	
28·65	3		+ 0		+ 3
		2		+ 2	
28·75	5		+ 2		+ ½
		4		+ 2½	
28·85	9		+ 4½		− 2
		8½		+ ½	
28·95	17½		+ 5		+ 2½
		13½		+ 3	
29·05	31		+ 8		+ 4½
		21½		+ 7½	
29·15	52½		+15½		+19
		37		+26½	
29·25	89½		+42		−39½
		79		−13	
29·35	168½		+29		+57½
		108		+44½	
29·45	276½		+73½		−45
		181½		− ½	
29·55	458		+73		+21½
		&c.		&c.	
&c.	&c.		&c.		&c.

EXAMPLE 2.

X.	NA.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.	5th Difference.	6th Difference.
Inches.		+					
61	1,674						
		9,871					
63	11,545		+27,118				
		36,989		+12,050			
65	48,534		+39,168		−32,925		
		76,157		−20,875		+ 5,648	
67	124,691		+18,293		−27,277		+ 60,549
		94,450		−48,152		+66,197	
69	219,141		−29,859		+38,920		
		64,591		− 9,232			
71	283,732		−39,091				
		25,500					
73	309,232						

Interpolation (including extrapolation) then consists in determining the value of NA corresponding to an assigned value of X, or the value of X corresponding to an assigned value of NA. For finding the ordinates of the curve of frequency we have, if X_0 and X_p are the bounding values of X,

$$A = \int_{X_0}^{X} Z dX \qquad \dots \qquad \dots \qquad \dots \qquad (1)$$

$$= 1 - \int_{X}^{X_p} Z dX \dots \qquad \dots \qquad \dots \qquad (1\text{A})$$

and therefore $$Z = dA/dX \qquad \dots \qquad \dots \qquad \dots \qquad (2)$$

or $$NZ = d(NA)/dX \qquad \dots \qquad \dots \qquad \dots \qquad (3)$$

4. When the differences of NA diminish very rapidly, the value of NA or of $d(NA)/dX$ for an assigned value of X is found by the ordinary methods of finite differences. Thus, if X_m is one of the tabulated values of X, and A_m the corresponding value of A, we have, for $X_{m+\theta} \equiv X_m + \theta h$,

$$NA_{m+\theta} = \left\{1 + \theta\Delta + \frac{\theta(\theta-1)}{2!}\Delta^2 + \dots\right\} NA_m \qquad \dots \qquad \dots \qquad \dots \qquad (4)$$

or, in terms of central differences,[2]

$$NA_{m+\theta} = \left\{1 + \frac{\theta(\theta-1)}{2!}\delta^2 + \frac{(\theta+1)\theta(\theta-1)(\theta-2)}{4!}\delta^4 + \dots\right\} NA_m$$
$$+ \left\{\frac{\theta}{1!}\delta + \frac{(\theta+1)\theta(\theta-1)}{3!}\delta^3 + \frac{(\theta+2)(\theta+1)\theta(\theta-1)(\theta-2)}{5!}\delta^5 + \dots\right\} NA_{m+\frac{1}{2}} \quad (5)$$

$$NA_{m+\theta} = \left\{1 + \frac{\theta(\theta-1)}{2!}\delta^2 + \frac{(\theta+1)\theta(\theta-1)(\theta-2)}{4!}\delta^4 + \dots\right\} NA_{m+1}$$
$$+ \left\{\frac{\theta-1}{1!}\delta + \frac{\theta(\theta-1)(\theta-2)}{3!}\delta^3 + \frac{(\theta+1)\theta(\theta-1)(\theta-2)(\theta-3)}{5!}\delta^5 + \dots\right\} NA_{m+\frac{1}{2}} \quad (6)$$

---

[2] In this notation

$$\left.\begin{aligned} \delta\phi(X) &= \phi(X + \tfrac{1}{2}h) - \phi(X - \tfrac{1}{2}h) \\ \mu\phi(X) &= \tfrac{1}{2}\{\phi(X + \tfrac{1}{2}h) + \phi(X - \tfrac{1}{2}h)\} \end{aligned}\right\}$$

For a list of formulæ, see *Proc. Lond. Math. Soc.*, vol. xxxi, p. 449.

Similarly, to find the ordinates corresponding to the tabulated values of X, we have, in terms of advancing differences,

$$h \,.\, NZ_m = (\Delta - \tfrac{1}{2}\Delta^2 + \tfrac{1}{3}\Delta^3 - \,.\,\,.\,\,.\,)NA_m \qquad \ldots \qquad (7)$$

while the use of central differences gives us for these ordinates

$$h \,.\, NZ_m = \mu\left(\delta - \frac{1}{6}\delta^3 + \frac{1}{30}\delta^5 - \frac{1}{140}\delta^7 + \,.\,\,.\,\,.\,\right)NA_m \quad \ldots \qquad (8)$$

or for the ordinates midway between them,

$$h \,.\, NZ_{m+\frac{1}{2}} = \left(\delta - \frac{1}{24}\delta^3 + \frac{3}{640}\delta^5 - \frac{5}{7168}\delta^7 + \,.\,\,.\,\,.\,\right)NA_{m+\frac{1}{2}} \quad (9)$$

For other values of X the ordinates could be got from these values by interpolation, or else from a formula deduced from (4), (5), or (6) by differentiation with regard to θ.

These formulæ might, for instance, be applied to practically the whole of the range in Example 1, to the middle and upper part of the range in Example 3, and to a small portion of the range in Example 4. But they are not applicable in Example 2, partly because the classification is incomplete, and partly because the interval h has not been taken small enough; and they are not applicable at the lower extremity of the range in Example 3, or at either extremity of the range in Example 4, since the ordinates here are very great, and the frequency is changing very rapidly.

The question to be considered in this paper is how difficulties of this kind are to be got over.

Use of Logarithms.

5. A simple example of the method to be employed is afforded by the use of logarithms in dealing with the "tail" of a curve. Suppose that in Example 1 the tabulation was only by intervals of 0·3 in., from X = 28·35 in. Then we should have

X.	NA.	1st Difference.	2nd Difference.	3rd Difference.
Inches.		+		
28·35	0		+ 3	
		3		+ 8½
28·65	3		+ 11½	
		11½		+ 46
28·95	17½		+ 57½	
		72		+ 239
29·25	89½		+ 296½	
		368½		+ 401½
29·55	458		+ 698	
		1066½		+ 6
29·85	1524½		+ 704	
		1770½		−1355
30·15	3295		− 651	

These differences run quite regularly, but they are mostly so great that they cannot conveniently be used for purposes of interpolation. If, however, we take logarithms of NA, we have

X.	Log$_{10}$ (NA).	1st Difference.	2nd Difference.	3rd Difference.
Inches.		+		
28·35	− ∞			
		∞		
28·65	·4771		− ∞	
		·7659		+ ∞
28·95	1·2430		− ·0571	
		·7088		+ ·0574
29·25	1·9518		+ ·0003	
		·7091		− ·1872
29·55	2·6609		− ·1869	
		·5222		− ·0005
29·85	3·1831		− ·1874	
		·3348		− ·0204
30·15	3·5179		− ·2078	

Here the third differences are small—in some cases very small—in comparison with the first differences, and interpolation is easy. We might, for instance, in interpolating between X = 28·95 in. and X = 29·55 in., take ·709 as the constant first difference, the logarithms being taken to three places of decimals. Reconstructing this part of the table, we get

X.	Log$_{10}$ (NA).	NA (Calculated).	NA (True Value).	Error.
Inches.				
28·95	1·243	17½	17½	....
29·05	1·479	30	31	− 1
29·15	1·716	52	52½	− ½
29·25	1·952	89½	89½	....
29·35	2·188	154½	168½	−14
29·45	2·425	266	276½	−10½
29·55	2·661	458	458	....

The "errors" shown in the last column (when they exceed ½) are really the irregularities in the actual data, due to random selection.

The same method might be employed for purposes of extrapolation. Suppose, for instance, that the tabulation was only from X = 29·25 in., by differences of 0·3 in. Then we have

X.	Log$_{10}$ (NA).	1st Difference.	2nd Difference.	3rd Difference.
Inches.				
30·45	3·645			
		− 127		
30·15	3·518		− 208	
		− 335		− 21
29·85	3·183		− 187	
		− 522		0
29·55	2·661		− 187	
		− 709		
29·25	1·952			

Continuing the series by taking the fourth difference as constant and equal to + 21, we get

X.	Log_{10} (NA).	NA
Inches.		
28·95	1·077	12
28·65	·078	1
28·35	$\bar{1}$·018	0

These results are only moderately good, but they are better than could be obtained by direct extrapolation from the values of NA. Their unsatisfactory nature shows the absolute necessity of complete classification, wherever possible.

For finding the ordinates of the figure of frequency, its area being taken to be N, we have

$$\begin{aligned} \text{NZ} &= d(\text{NA})/d\text{X} \\ &= \log_e 10 \,.\, \text{NA} \,.\, d\log_{10}(\text{NA})/d\text{X}. \end{aligned}$$

The following are some values of h.NZ as found by this formula, compared with the values found directly from NA; the tabulation in each case being by intervals of $h = 0·1$ in., and the differential coefficients being obtained from the first and third differences by the formula (8).

X.	h . NZ (from Log_{10} NA)	h . NZ (from NA).
Inches.		
28·65	2	2
28·75	3	3
28·85	6	6
28·95	11	11
29·05	17	17
29·15	28	26
29·25	52	57
29·35	95	91
29·45	138	141

There are slight differences between the two sets of values, the irregularities of random selection producing different effects in the two cases.

The same method might be applied to either extremity of the figure in Example 2. Thus for the lower extremity we have

X.	Log_{10} (NA).	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.
Inches.		+	−	+	
61	3·22376				
		83863			
63	4·06239		21497		
		62366		110	
65	4·68605		21387		+ 4786
		40979		4896	
67	5·09584		16491		− 1674
		24488		3222	
69	5·34072		13269		+ 2566
		11219		5788	
71	5·45291		7481		
		3738			
73	5·49029				

This would give decidedly better results, as regards the smaller values of X, than could be obtained from the direct tabulation of NA. For the upper extremity of the figure we should take the logarithms of N − NA.

The method might also be applied to the upper extremity of the figure in Example 3; but, on account of the way in which this latter table was constructed, we should not get appreciably better results than by dealing with NA directly.

Meaning of term "Auxiliary Curve."

6. The advantage of the above method is that in some cases, by tabulating $\log_{10}(\text{NA})$ instead of NA, we are enabled to neglect all differences after the first, for certain portions of the range of values of X. This is equivalent to treating $\log_{10}(\text{NA})$, for each such portion of the range, as a linear function of X; in other words, to replacing the corresponding arc of the curve of frequency by an arc whose equation is given by

$$\text{A} = e^{p\text{X}+q} \quad \dots \quad \dots \quad \dots \quad (\alpha)$$

where p and q are constants whose values are determined by the values of A between which the interpolations are made. Or, if we consider x as a quantity whose values for successive values of X are given by

$$\text{A} = e^{x} \quad \dots \quad \dots \quad \dots \quad \dots \quad (\beta)$$

then we are treating x as a linear function of X; *i.e.*, we are taking the curve given by (β), we are shifting it and projecting it so as to fit two consecutive values of A, and we are then using it in the place of the true curve of frequency for this portion of the range of X. The sole but sufficient justification for this procedure is that an inspection of the differences of $\log_{10}(\text{NA})$ shows that it will give good results.

The method may be extended as follows. Let

$$z = f(x) \quad \dots \quad \dots \quad \dots \quad (10)$$

be the equation to any curve, and let the area of this curve from the ordinate $z_0 \equiv f(x_0)$ to the ordinate z be denoted by a. Then we have

$$a = \int_{x_0}^{x} z\,dx \quad \dots \quad \dots \quad \dots \quad (11)$$

and therefore

$$z = da/dx \quad \dots \quad \dots \quad \dots \quad (12)$$

Now let X and x be related by the condition that

$$\text{A} = a \quad \dots \quad \dots \quad \dots \quad \dots \quad (13)$$

always, throughout any part of the range of values of X. Then (11) gives us a series of values of x, corresponding to the selected values of X. If the form of $f(x)$ could be so chosen that the second differences of x with regard to X were negligible, we could replace the curve of frequency, within this part of the range, by the curve (10). This is not usually possible. But it is very often possible to choose $f(x)$ so that the successive differences of x with regard to X diminish very rapidly. We can then use interpolation-formulæ for calculating the values of x for intermediate values of X; these will give the values of a, which are the same as those of A. Also

$$\begin{aligned} hZ &= h \,.\, dA/dX \\ &= h \,.\, da/dX \\ &= h \,.\, da/dx \,.\, dx/dX \\ &= z \,.\, hdx/dX \quad \ldots \quad \ldots \quad \ldots \quad (14) \end{aligned}$$

For the selected values of X, or for intermediate values, the values of hdx/dX can be calculated by formulæ similar to those given in sec. 4; and, z being known for any given value of x, the value of Z can be deduced from (14). The curve (10), when used in this way, is called an *auxiliary curve.*

It should be noticed (i) that it is not necessary to use the same form for $f(x)$ throughout the whole range of values of X, and (ii) that, even if $f(x)$ is taken of the same form throughout, we are not replacing the curve of frequency by any one curve throughout its whole length. If, for instance, differences of x after the second are negligible, we are taking x to be of the form $\frac{1}{2}pX^2 + qX + r$; *i.e.*, we are replacing the curve of frequency by a curve

$$Z = (pX + q)f(\tfrac{1}{2}pX^2 + qX + r).$$

But the values of p, q, and r are perpetually changing as we pass from one portion of the range to another, so that the successive arcs used are not really continuous with one another.

Symmetrical Exponential Curve.

7. It has been suggested in § 5 that in the case of curves of the general type exhibited in Examples 1 and 2 we can use $z = e^x$ as the auxiliary curve at one end of the range, and $z = e^{-x}$ at the other. It will be found more convenient in practice to combine the two processes, by taking a symmetrical curve as our auxiliary curve throughout the whole range. For this purpose our notation must be slightly altered. Let $N_1 \equiv NA$ and $N_2 \equiv N(1 - A)$ be the numbers respectively below and above X, and let us write

$$\left.\begin{aligned} N_1 &= \tfrac{1}{2}N(1 + a) \\ N_2 &= \tfrac{1}{2}N(1 - a) \end{aligned}\right\} \quad \ldots \quad \ldots \quad (15)$$

so that

$$a = (N_1 - N_2)/N \ldots \quad \ldots \quad \ldots \quad (16)$$

Then we have

$$Z = \tfrac{1}{2}da/dX \quad \ldots \quad \ldots \quad \ldots \quad (17)$$
$$z = \tfrac{1}{2}da/dx \quad \ldots \quad \ldots \quad \ldots \quad (18)$$

Now suppose we take $f(x)$ to be such that

$$x = \log_{10}\frac{1 + a}{1 - a} \quad \ldots \quad \ldots \quad \ldots \quad (19)$$

Then, for any particular value of X, the corresponding value of x is

$$x = \log_{10}N_1 - \log_{10}N_2 \quad \ldots \quad \ldots \quad \ldots \quad (20)$$

For the auxiliary curve we have in this case, from (19),

$$a = (10^{\frac{1}{2}x} - 10^{-\frac{1}{2}x})/(10^{\frac{1}{2}x} + 10^{-\frac{1}{2}x}) = \tanh(\tfrac{1}{2}x\log_e 10) \quad \ldots \quad (21)$$

and thence

$$z = \tfrac{1}{2}da/dx = \tfrac{1}{4}\log_e 10 \,.\, \mathrm{sech}^2(\tfrac{1}{2}x\log_e 10) \quad \ldots \quad (22)$$

This latter is therefore the equation to the auxiliary curve.

If then we find that the differences of $x \equiv \log_{10}N_1 - \log_{10}N_2$ diminish with sufficient rapidity, we can calculate x for any assigned value of X by an interpolation-formula, and we then have for the corresponding values of N_1 and N_2

$$\left.\begin{aligned} \log_{10}N_1 &= \log_{10}\{\tfrac{1}{2}N(1+a)\} = \log_{10}N - \log_{10}(1+10^{-x}) \\ \log_{10}N_2 &= \log_{10}\{\tfrac{1}{2}N(1-a)\} = \log_{10}N - \log_{10}(1+10^{x}) \end{aligned}\right\} \quad (23)$$

In this form the values of $\log_{10}N_1$ and $\log_{10}N_2$ may be calculated from those of x by means of Gaussian logarithms. Or we might, of course, find the value of $(1+a)/(1-a)$ from (19) by ordinary logarithmic tables, and thence calculate N_1 and N_2 from (15). Also for calculating NZ we have

$$\frac{dx}{da} = \log_{10}e \,.\, \frac{2}{1-a^2},$$

whence, by (17) and (18),

$$h \,.\, NZ = P \,.\, h dx/dX \quad \ldots \quad \ldots \quad \ldots \quad (24)$$

where

$$\left.\begin{aligned} P &= \log_e 10 \,.\, N_1N_2/N \\ \log_{10}P &= \cdot 3622157 + \log_{10}N_1 + \log_{10}N_2 - \log_{10}N \end{aligned}\right\} \ldots \quad (25)$$

If we apply this method to Example 2, we get

X.	x.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.
Inches.		+		+	
61	$\bar{3}$·72690				
		85251			
63	$\bar{2}$·57941		− 17253		
		67998		4812	
65	$\bar{1}$·25939		− 12441		+ 6205
		55557		11017	
67	$\bar{1}$·81496		− 1424		− 4426
		54133		6591	
69	·35629		+ 5167		+ 2505
		59300		9096	
71	·94929		+ 14263		
		73563			
73	1·68492				

The differences are still great, but they diminish more rapidly than the differences of NA.

Normal Curve (Curve of Error).

8. In a large number of cases we get a still better result by using the curve of error, or *normal curve*, as the auxiliary curve.

Here we have

$$z = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (26)$$

$$a = \sqrt{\frac{2}{\pi}} \int_0^x e^{-\frac{1}{2}x^2} dx \quad \ldots \quad \ldots \quad \ldots \quad (27)$$

The value of x for any given value of a can be found from existing tables.[3]

This method is most directly applicable when the data do in fact give the result of a random selection from a community in which the different values of X are distributed according to the normal law. Thus Example 2 gives

X.	x.	1st Difference.	2nd Difference.
Inches.		+	
61	− 2·55536		
		76351	
63	− 1·79185		+ 796
		77147	
65	− 1·02038		− 1723
		75424	
67	− ·26614		+ 2003
		77427	
69	+ ·50813		− 671
		76756	
71	+ 1·27569		+ 558
		77314	
73	+ 2·04883		

Here the second differences of x are sufficiently small, and at the same time sufficiently irregular, to justify us in supposing[4] that they represent discrepancies introduced by the paucity of the observations. But, whether this is the case or not, we can obtain very good results by using first differences alone.

The method, however, is not restricted to cases of this kind. Its applicability to other cases may be illustrated by considering theoretical examples.

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[3] There are some short tables giving a in terms of x; but the most complete tables only give a in terms of t, where $t = x/\sqrt{2}$. I have recently compiled tables giving z and a in terms of x, and also z and x in terms of a; but they are not yet published.

[4] If z_1, z_2, z_3 are three successive ordinates, dividing a figure of frequency (of area unity) into portions P, Q, R, S, and if the corresponding abscissæ are x_1, x_2, x_3, the probable error in $x_1 - 2x_2 + x_3$ (whether $x_2 - x_1$ and $x_3 - x_2$ are equal or not) is $\cdot 67449 \ldots \Theta/\sqrt{N}$, where (writing ρ for $1/z$)

$$\Theta^2 = P(\rho_1 - \rho_2)^2 + (Q + R)\rho_2^2 + S(\rho_2 - \rho_3)^2 \\ - \{P\rho_1 - (P + Q - R - S)\rho_2 - S\rho_3\}^2.$$

To test whether the data satisfy the normal law, the probable errors found from this formula may be compared with the actual second differences of x. I have not made the calculations in this particular case.

9. The following two examples will be sufficient. It will be noticed that in each case the curve of frequency is decidedly unsymmetrical.

EXAMPLE 5.—*Skew Probability-Curve.*

$Z \propto X^5(10 - X)^6$. $N = 10^{12}$. (Representative selection.)

Values of X.	Number.
0— 1	541,231,822
1— 2	18,864,047,410
2— 3	98,443,459,630
3— 4	216,942,703,570
4— 5	278,001,526,318
5— 6	228,994,738,642
6— 7	119,611,449,550
7— 8	34,697,711,410
8— 9	3,852,951,310
9—10	50,180,338
Total	1,000,000,000,000

EXAMPLE 6.—*Composite Normal Curve.*

$$Z = \frac{1}{4}N \left\{ \frac{1}{\sqrt{\pi}} e^{-\frac{1}{4}X^2} + \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{8}(X-1)^2} \right\}. \quad N = 100,000.$$

(Approximately representative selection.)

X	Number.	X	Number.
−8 to −7	2	2 to 3	10,579
−7 ,, −6	10	3 ,, 4	5,323
−6 ,, −5	66	4 ,, 5	2,309
−5 ,, −4	349	5 ,, 6	837
−4 ,, −3	1,558	6 ,, 7	243
−3 ,, −2	5,288	7 ,, 8	56
−2 ,, −1	12,647	8 ,, 9	10
−1 ,, 0	20,507	9 ,, 10	2
0 ,, 1	22,585	Total	100,000
1 ,, 2	17,629		

If we take the successive differences in Example 5, it will be found that they are always very great. Using the normal curve as an auxiliary curve, we get

X.	*x*.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.	5th Difference.	6th Difference.	7th Difference	8th Difference.
		+		+		+		+	
0	− ∞								
		∞							
1	−3·268167		− ∞						
		1201977		∞					
2	−2·066190		−321597		− ∞				
		880380		200306		∞			
3	−1·185810		−121291		−124777		− ∞		
		759089		75529		96909		∞	
4	− ·426721		− 45762		− 27868		−68500		− ∞
		713327		47661		28409		69097	
5	+ ·286606		+ 1899		+ 541		+ 597		+2359
		715226		48202		29006		71456	
6	+1·001832		+ 50101		+ 29547		+72053		− ∞
		765327		77749		101059		∞	
7	+1·767159		+127850		+130606		+ ∞		
		893177		208355		∞			
8	+2·660336		+336205		+ ∞				
		1229382		∞					
9	+3·889718		+ ∞						
		∞							
10	+ ∞								

On this table, the question arises, how many differences we can use in applying any of our formulæ. The general principle is that as many differences should be used as possible, but that we should stop when differences begin to diverge. Since the eighth difference 2,359 is relatively small, and the outer differences up to this are more or less convergent, we are justified in writing our formulæ so as to go to eighth differences, finishing always with this particular difference, and keeping always within the lines along which the differences are infinite. This might appear, at first sight, to involve rather complicated formulæ. But the effect is the same as if we treated the eighth difference as *constant*, and equal to + 2,359; and it will be found simplest to reconstruct the table on this basis, so as to be able to use either central-difference formulæ or any other formulæ that seem more suitable.

To show the degree of accuracy that can be obtained, I have calculated the values of A and of Z on this basis, for $X = 1\frac{1}{2}$, $2\frac{1}{2}$, ... $8\frac{1}{2}$, working always to six or seven places of decimals. The following shows the result, the calculated values (using differences up to the eighth) being compared with the true values :—

X.	*x*.	A (Calculated Value).	A (True Value).	*z*.	*dx*/*d*X.	Z, (Calculated Value).	Z (True Value).
$1\frac{1}{2}$	−2·604441	·004601	·004642	·0134268	1·180740	·015854	·015878
$2\frac{1}{2}$	−1·603144	·054451	·054402	·1103637	·873077	·096356	·096359
$3\frac{1}{2}$	− ·797114	·212692	·212735	·2903600	·756350	·219614	·219606
$4\frac{1}{2}$	− ·067468	·473105	·473070	·3980353	·711426	·283173	·283180
$5\frac{1}{2}$	+ ·641147	·739286	·739315	·3248235	·713304	·231698	·231692
$6\frac{1}{2}$	+1·374721	·915391	·915368	·1550717	·762510	·118244	·118249
$7\frac{1}{2}$	+2·189803	·985731	·985747	·0362775	·885600	·032127	·032120
$8\frac{1}{2}$	+3·209154	·999335	·999328	·0023129	1·207114	·002792	·002802

Considering that the difference between successive values of X is nearly three-fourths of the standard deviation, and that the curve differs in important particulars from the normal curve, these results may be regarded as fairly satisfactory.

In practical cases we are not able to go to this extreme degree of accuracy. Apart from errors of random selection, the mere fact that the frequency diminishes towards the extremities of the range causes the values of x for extreme values of X to be only approximately correct. This does not matter so much when we are only dealing with the extreme values of X themselves: but it necessarily introduces large errors into the high differences. The advantage of the suggested method is that it enables us to get fairly good results by neglecting differences beyond the second or third, or even beyond the first.

To illustrate this, let us calculate the "quartile" values of X for Example 6, (1) from the values of A directly, (2) by use of the symmetrical exponential curve, and (3) by use of the normal curve, the values in each case being calculated to a first approximation by first differences alone, and then to a second approximation by taking account of second differences. The following shows the values of A and of x: their respective differences are omitted, in order to economise space:—

X.	A.	$\log_{10}\frac{1+\alpha}{1-\alpha}$	x (Normal Curve).	X.	A.	$\log_{10}\frac{1+\alpha}{1-\alpha}$	x (Normal Curve).
− 8	·00000	− ∞	− ∞	2	·80641	+ ·61967	+ ·86474
− 7	·00002	−4·69896	−4·10748	3	·91220	+1·01660	+1·35443
− 6	·00012	−3·92077	−3·67270	4	·96543	+1·44602	+1·81750
− 5	·00078	−3·10757	−3·16328	5	·98852	+1·93504	+2·27410
− 4	·00427	−2·36771	−2·62994	6	·99689	+2·50589	+2·73595
− 3	·01985	−1·69353	−2·05686	7	·99932	+3·16720	+3·20301
− 2	·07273	−1·10549	−1·45576	8	·99988	+3·92077	+3·67270
− 1	·19920	− ·60423	− ·84448	9	·99998	+4·69896	+4·10748
0	·40427	− ·16838	− ·24231	10	1·00000	+ ∞	+ ∞
1	·63012	+ ·23136	+ ·33217				

The quartile values of X (including the median) are given by $A = \frac{1}{4}$, $A = \frac{1}{2}$, and $A = \frac{3}{4}$ respectively. The corresponding values for the abscissæ of the symmetrical exponential curve and of the normal curve are respectively $-\log_{10} 3$, 0, $+\log_{10} 3$, and $-·67449$, 0, $+·67449$. The following shows the result of taking first differences alone, and first and second differences together; the formula for approximating with second differences being

$$x_{m+\theta} = x_m + \theta(x_{m+1} - x_m) - \tfrac{1}{4}\theta\,(1-\theta)\,(\delta^2 x_m + \delta^2 x_{m+1}).$$

The values are given to five places of decimals, but the fifth figure would usually be different if A were taken to a larger number of places:—

Description.	True Value of X.	First Approximation.			Second Approximation.		
		Direct.	Exponential Curve.	Normal Curve.	Direct.	Exponential Curve.	Normal Curve.
Lower quartile	− ·72060	− ·75228	− ·70836	− ·71770	− ·72859	− ·72010	− ·72078
Median	+ ·41421	+ ·42387	+ ·42122	+ ·42179	+ ·41613	+ ·41402	+ ·41444
Upper quartile	+ 1·63275	+ 1·68002	+ 1·63290	+ 1·64277	+ 1·64083	+ 1·63247	+ 1·63353

It will be noticed that in some places the symmetrical exponential curve gives a better result than the normal curve: but both give decidedly better results than those obtained directly from the values of A.

Choice of suitable Curve.

10. If we apply our method to Example 1, it will be found that the symmetrical exponential curve and the normal curve give about equally good results, the sequence of irregularities in the third differences being almost exactly the same in the two cases. The values are not given here, as the method has been sufficiently explained. But the question arises, whether we could not simplify the process of finding the most suitable auxiliary curve without going through the labour of calculating the series of values of x for each curve suggested. This can be done by the use of graphical methods.

Let the equation to the true curve of frequency of X, in the community from which the random selection of N values is made, be

$$Z = F(X) \qquad \ldots \qquad \ldots \qquad \ldots \qquad (28)$$

and let A denote now the *true* area of this curve from its lower bounding ordinate up to the ordinate Z, so that

$$A = \int^{X} Z dX \qquad \ldots \qquad \ldots \qquad \ldots \qquad (29)$$

the whole area of the curve being taken to be unity. Suppose that the values of X are measured along a line OX, and that from OX as base we draw a series of ordinates equal to the given values of N_1/N, when N_1 is the number of observations below the value X. Then, if we disregard errors of random selection, and treat the data as a representative selection from a community with the curve of frequency given by (28), these ordinates will give the values of A for the given values of X; and the intermediate values of A will be the intermediate ordinates of a curve drawn as uniformly as possible through the extremities of the original ordinates, while the values of $Z \equiv dA/dX$ will be given by the directions of the tangents to this curve. Fig. 1, for instance (p. 458), shows the form of the curve for the frequencies given by Example 1. If, on the other hand, errors of random selection are taken into account, the values of A and of dA/dX are still given by a curve, the conditions now being that the vertical distance of the curve from the extremity of each of the original ordinates should not be a large multiple of the probable error

$\cdot 67449 \ldots \sqrt{A(1-A)/N}$, and that in about half the cases considered the distance should be less than the probable error.

If we interpolated for A by using first differences alone, the effect would be the same as if we replaced this *integral-curve of frequency* by a series of chords joining the extremities of the ordinates. It is easily seen from fig. 1 that this would produce large errors, except near the point of inflexion, corresponding to the "modal" value of X (see § 1). Similarly, if we went to third differences, the effect would be that of replacing each arc of the curve by the middle part of a cubical parabola passing through the extremities of four consecutive ordinates.

Now suppose we take ordinates equal to x, instead of to A. Then the same remarks apply. If the first differences of x were constant, the extremities of the new ordinates would lie in a straight line; and, if they were *nearly* in a straight line, we should get good results by using first differences alone. Similarly, if the extremities lay very nearly on a parabola, we could get good results without going beyond second differences; and so on.

It is easier to see whether a series of points are nearly in a straight line than whether they are nearly on a parabola; and we should therefore, in general, choose as our auxiliary curve the curve which makes the extremities of the ordinates as nearly collinear as possible.

To find the suitable curve, without calculating the values of x, we should use paper ruled with lines at distances corresponding to the successive values of x for equal increments in A or α. If the ruling is sufficiently minute, the ordinates giving x for the selected values of X can be drawn with very great accuracy.[5]

For using the symmetrical exponential curve or the normal curve, Tables I and II in the Appendix (pp. 456 and 457) will be found useful. The table, in each case, gives the values of x corresponding to those of α, by intervals of ·01 in α.[6]

Figs. 2 and 3 (p. 458) show the result of applying the above method to Example 1, fig. 2 being for the symmetrical exponential curve, and fig. 3 for the normal curve. The figures, for convenience of comparison, are placed close together, vertically underneath fig. 1; and portions of the lines corresponding to $\alpha = \cdot 0_1, \pm \cdot 2, \pm \cdot 4, \ldots$ are shown in each case.[7] It will be seen that, as has already been stated, the two curves give about equally good results.

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[5] If a large scale of measurement were used, a further refinement might be introduced by drawing a series of curves to measure the probable errors. The curves would have a common base, at right angles to the lines determining x, and would correspond to different values of N; the ordinates of any particular curve, for the different values of a, being the probable errors in x, measured on the same scale as x itself.

[6] Table II is taken from a paper printed in *Philosophical Transactions*, Series A, vol. 192 (1898), at p. 167. The appearance which the ruled paper would take for the normal curve may be seen from the figure on p. 143 of the same volume; but the lines in that figure are ruled both horizontally and vertically, by intervals of ·02 in a.

[7] There is some resemblance between the method suggested in this paper and a method explained by Professor Edgeworth in recent numbers of the *Journal*;

Smoothing of Data.

11. We have hitherto ignored, as far as possible, the difficulties that arise in practice from the necessity of "smoothing" the data. The process of random selection (or, to use Professor Pearson's better expression, of *random sampling*) necessarily produces irregularities in the differences of NA. The general question of dealing with these irregularities is too wide to be considered here, but some remarks may be made on it.

The simplest way of looking at the question is to take a particular case, such as the sequence of values of x given by the application of the normal curve as an auxiliary curve to Example 2 (see § 8). There are several different ways in which we might deal with the data so obtained. For simplicity, let us suppose that the problem is to find the (most probable) numbers respectively below and above X = 68 in.

(i.) It has already been remarked that the sequence of second differences in the new table suggests that the data may represent a random sample from a normal distribution. Whether this is reasonably possible may be tested by means of the theory of probability (see footnote to p. 444). If we decide that it is, the most probable values of the two constants determining the original distribution are to be found by certain special considerations. This having been done, we may take the distribution so determined, and find the value of α corresponding to X = 68 in., the original data being entirely discarded.

(ii.) Instead of going to this length, we may consider the most probable distribution of the 94,450 individuals between 67 in. and 69 in., on the assumption that they represent a random sample from the distribution as above determined. Thus, let A, B, C be the areas into which this distribution is divided by the ordinates corresponding to X = 67 in. and X = 69 in. Then we have

	Below 67 in.	Between 67 in. and 69 in.	Above 69 in.
Theoretical distribution	NA	NB	NC
Actual "	124,691	94,450	96,479

Each of the three numbers in the actual distribution is regarded as the result of random sampling; and the 94,450 between 67 in. and 69 in. are to be distributed below and above 68 in. in the same proportions as the NB in the theoretical distribution, although the ratio A : B : C is not the same as the ratio 124,691 : 94,450 : 96,479.

---

but the two are really quite distinct. Practically, Professor Edgeworth's method consists in regarding X as being of the form $p + qx + rx^2 + \ldots$, where the values of x are distributed normally; the coefficients $p, q, r, \ldots$ being constant throughout the range. The number of these constants is determined by repeated trials; their values are found by taking moments; and the only test of the validity of the assumption is the fit of the curve as a whole. My method consists in treating X as if it satisfied the relation $x = \mathrm{P} + \mathrm{QX} + \mathrm{RX}^2 + \ldots$; the number of the coefficients P, Q, R, . . . being left indeterminate, and their values being allowed to change from class to class. The assumption is verified by taking differences; and, until this has been done, no use is made of it.

(iii.) A still slighter variation from the original data is made by refraining from calculating the constants of the most probable original distribution, while at the same time regarding this distribution as normal. In other words, we first test whether the assumption as to an original normal distribution is justifiable, and then fix a particular distribution for interpolation in each class, by the actual numbers determined by that class. Thus, for our particular problem, we should distribute the 94,450 in the same way as the NB of a normal distribution, but the values of NA, NB, and NC are now taken to be exactly equal to 124,691 ; 94,450 ; and 96,479 respectively. It is easily seen that this comes to the same thing as interpolating in each class by the first differences alone of the value of x.

(iv.) Or, finally, we can disregard entirely the question whether the original distribution may be normal, and consider only how the differences of x may be smoothed without altering the values of NA which determine the particular class. Thus, to interpolate between $X = 67$ in. and $X = 69$ in., we should keep these values of x unaltered, and alter the other values as seems to us best. Our table may then be written in the form :—

X.	x.	1st Difference.	2nd Difference.
Inches.			
61	$-2{\cdot}55536+\theta$		
		$76351-\theta+\phi$	
63	$-1{\cdot}79185+\phi$		$+796+\theta-2\phi+\psi$
		$77147-\phi+\psi$	
65	$-1{\cdot}02038+\psi$		$-1723+\phi-2\psi$
		$75424-\psi$	
67	$-{\cdot}26614$		$+2003+\psi$
		77427	
69	$+{\cdot}50813$		$-671+\chi$
		$76756+\chi$	
71	$+1{\cdot}27569+\chi$		$+558-2\chi+\omega$
		$77314-\chi+\omega$	
73	$+2{\cdot}04883+\omega$		

But this method will generally lead to the same result as (iii). For in applying (iii) we are supposing that the data are consistent with the assumption that the original distribution was normal; and this implies, amongst other things, that the second differences of x are so irregular as not to suggest any definite sequence. The simplest values for θ, ϕ, ψ, χ, ω would therefore be such as would make the second differences of x disappear altogether; and, if we corrected the values of x in this way, the result would be the same as if we interpolated between $X = 67$ in. and $X = 69$ in. by means of first differences only of x.

This last method therefore has some arguments in its favour; and it has the advantage of simplicity. But it is not suggested that it is the absolutely best method.

Algebraical Curve with Fractional Index.

12. We come now to the last and most difficult class of cases; those, namely, in which the extreme ordinate is very great, and the curve of frequency descends very rapidly from it. This is illustrated by the lower extremity of Example 3, and both extremities of Example 4. The former is the simplest case, since we know the position of the bounding ordinate; and therefore it may be considered first.

The preliminary question is whether we are to regard the bounding ordinate as finite or as infinite; and, if finite, whether the curve of frequency is to be regarded as leaving it at a finite or at an indefinitely small angle. On the one hand, the table could, if we had sufficient information, be continued backwards so as to include ante-natal deaths, the true boundary of the figure of frequency being then at $X = -\cdot 75$; and this suggests that the ordinate at $X = 0$ should be finite. On the other hand, birth introduces a change of conditions, which may cause the curve to change its direction and fall very rapidly at this point. On the whole, therefore, we may consider that Z is so great as to be practically infinite, and that $-dZ/dX$ may be regarded as infinite.

When Z and $-dZ/dX$ are both infinite for $X = X_0$, the curve in the immediate neighbourhood of this point is often approximately of the form $Z \propto (X - X_0)^{-p}$, where p lies between 0 and 1; this limitation of the value of p being due to the fact that the area of the whole curve is finite. We have therefore, approximately,

$$A \propto (X - X_0)^q \quad \ldots \quad \ldots \quad \ldots \quad (30)$$

where $q \equiv 1 - p$ is a quantity between 0 and 1. This suggests the use of the curve

$$\lambda a = x^q \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (31)$$

as our auxiliary curve, where λ is a constant introduced for convenience of calculation.

If the figure of frequency were accurately given by (30), we should have, A_m and A_n being the values of A corresponding to $X = X_m$ and $X = X_n$ respectively, and C being a constant,

$$\left.\begin{aligned} \log A_m &= C + q \log (X_m - X_0) \\ \log A_n &= C + q \log (X_n - X_0) \end{aligned}\right\},$$

and therefore

$$1/q = \frac{\log (X_m - X_0) - \log (X_n - X_0)}{\log \lambda A_m - \log \lambda A_n} \quad \ldots \quad \ldots \quad (32)$$

Hence, if we use (31) as our auxiliary curve, so that $a = A$, the values of x in terms of X are given by

$$\log x = 1/q \,.\, \log \lambda A \quad \ldots \quad \ldots \quad \ldots \quad (33)$$

and the value of $1/q$ has to be determined so as to make the differences of x diminish as rapidly as possible. If we apply (32) to different sets of values of X_m and X_n, we shall in general get different values of $1/q$. But if these values are very nearly equal, or show some regular progression, we may be able to hit on a value which, when used in (33), will give values of x suitable for interpolation. The best value will usually be that which the sequence of values suggests as corresponding to $X_m = X_n = X_0$.

Thus Example 3 gives, taking $\lambda = N/10^4$,

X.	λA.	$\text{Log}_{10}(\lambda A)$.
0	0	$-\infty$
1	1·4358	·1577589
2	1·8320	·2629255
3	2·0695	·3158654
4	2·2341	·3491026
5	2·3666	·3741249

Applying (32) to different pairs of values of m and n, we get the following values of $1/q$:—

$m =$	1.	2.	3.	4.
$n = 2$	2·86			
3	3·02	3·33		
4	3·15	3·49	3·76	
5	3·23	3·58	3·81	3·87

These values do not agree very closely, and the method can therefore only give rough results. To test it, let us suppose X to be tabulated by intervals of two years, and let us take $1/q = 3\frac{1}{3}$, so that $q = \cdot 3$. Then we have

X.	$\text{Log}_{10}(\lambda A)$.	$\text{Log}_{10} x = 1/q . \log_{10}(\lambda A)$.	x.	1st Diff.	2nd Diff.	3rd Diff.
				+	−	
0	$-\infty$	$-\infty$	0·000			
				7·523		
2	·2629255	·8764183	7·523		·471	
				7·054		−·716
4	·3491026	1·1636753	14·577		1·187	
				5·867		−·134
6	·3931714	1·3105713	20·444		1·321	
				4·546		+·162
8	·4193278	1·3977593	24·990		1·159	
				3·387		
10	·4358921	1·4529737	28·377			

Calculating the values for X = 1, 3, 5 by advancing differences up to the third, I find

X.	x.	$\text{Log}_{10}(\lambda A) = q \log_{10} x$.	λA (Calculated).	λA (True Value).
1	3·8204	·1746326	1·4950	1·4358
3	11·1900	·3146490	2·0637	2·0695
5	17·6857	·3742867	2·3675	2·3666

These results are as good as could be expected, having regard to the fact that the original table is formed from a series of independent observations of mortality, so that there must be some irregularity.

For calculating the ordinates of the curve of frequency, we have from (31),

$$\lambda z = q x^{q-1} = q \,.\, \lambda a/x \quad \ldots \quad \ldots \quad (34)$$

and therefore,

$$h \,.\, \mathrm{NZ} = q \,.\, \mathrm{NA}/x \,.\, h dx/d\mathrm{X} \quad \ldots \quad \ldots \quad (35)$$

Thus, taking $1/q = 3\frac{1}{3}$ as before, we have

X.	*x.*	1st Difference.	2nd Difference.	3rd Difference.
		+		
0	0·000			
		3·356		
1	3·356		+ ·811	
		4·167		−1·206
2	7·523		− ·395	
		3·772		− ·095
3	11·295		− ·490	
		3·282		+ ·295
4	14·577		− ·195	
		3·087		− ·112
5	17·664		− ·307	
		2·780		− ·029
6	20·444		− ·336	
		2·444		− ·006
7	22·888		− ·342	

Finding $h dx/d\mathrm{X}$ by the formula corresponding to (8), and going to third differences only, I get the following values (h being $= 1$):—

X.	$dx/d\mathrm{X}$.	NZ.	$\mu = \mathrm{NZ}/(\mathrm{N} - \mathrm{NA})$.	μ (in Life-Table).
2	4·078	2979	·02734	·02366
3	3·510	1929	·01810	·01787
4	3·169	1457	·01388	·01379
5	2·945	1184	·01142	·01142
6	2·615	949	·00925	·00925

The values in the last column are those given in the Institute of Actuaries' Life-Table; but I think that my values, where they differ from these, are more correct. For X = 1, using advancing differences up to the third, I find

$$\mu = \cdot 04925,$$

which differs very greatly from the value given in the Life-Table.

13. In the case of Example 4 we require to find the positions of the bounding ordinates; *i.e.*, the values of X for $\mathrm{A} = 0$ and $\mathrm{A} = 1$. The method suggested is to try different values, say for X_0, until we get one which when used in (32) for different pairs of values of X_m and X_n will give approximately equal values for $1/q$. This

enables us to choose a value of $1/q$ for use in (33); and we thus get, as before, a series of values of x in terms of X. The value of X for $A = 0$ is the same as the value for $x = 0$; and this is to be found by indirect extrapolation.

Taking "degree 1" as meaning "$X = 1$ to $X = 2$," &c., the beginning of the original table is

X.	1.	2.	3.	4.	5.
NA	751	930	1,037	1,106	1,152

If we took $X = \frac{1}{2}$ as the value corresponding to $A = 0$, (32) would give us a number of values of $1/q$, all nearly equal to 5. Adopting this latter value, we get the following table:—

X.	$(NA)^5/10^{11}$.	1st Difference.	2nd Difference.	3rd Difference.
		+		
1	2389			
		4568		
2	6957		+ 467	
		5035		− 945
3	11992		− 478	
		4557		− 339
4	16549		− 817	
		3740		
5	20289			

If we smooth this table by altering the value for $X = 3$ to 11891 (which is only equivalent to altering 1,037 to 1,035), we have

X.	$(NA)^5/10^{11}$.	1st Difference.	2nd Difference.	3rd Difference.
		+		
1	2389			
		4568		
2	6957		+ 366	
		4934		− 642
3	11891		− 276	
		4658		− 642
4	16549		− 918	
		3740		
5	20289			

Continuing this table backwards, with − 642 as the constant third difference, the value of $(NA)^5/10^{11}$ is

$$-1179\,;$$

and then, by indirect interpolation, we find that for $A = 0$ we have

$$X = \cdot 375.$$

In the same way we might find X for $A = \cdot 1$, this being the first "decile" value; and so on.

The same method is to be adopted at the upper limit, except that the distribution here is so irregular that we must assume there has been some mistake in the observations, and must therefore use a good deal of freedom in our smoothing. After various trials, I took $1/q = 8$; and then, constructing a table of x, I smoothed this table so as to give a result practically equivalent to the following:—

X.	6 to 7.	7 to 8.	8 to 9.	9 to 10.	Above 10.
Number according to observations	21	71	194	117	2089
Substituted number	28	61	112	202	2089

Keeping $1/q = 8$, the substituted observations give $X = 10·982$ as the value corresponding to $A = 1$; but a different method of smoothing might give a very different result.

APPENDIX.

TABLE 1.—*Abscissa of Symmetrical Exponential Curve.*

a.	$\text{Log}_{10} \frac{1+a}{1-a}$	a.	$\text{Log}_{10} \frac{1+a}{1-a}$	a.	$\text{Log}_{10} \frac{1+a}{1-a}$	a.	$\text{Log}_{10} \frac{1+a}{1-a}$
·00	·00000	·26	·23114	·51	·48878	·76	·86530
·01	·00869	·27	·24048	·52	·50060	·77	·88625
·02	·01737	·28	·24988	·53	·51259	·78	·90800
·03	·02607	·29	·25933	·54	·52476	·79	·93063
·04	·03476	·30	·26885	·55	·53712	·80	·95424
·05	·04347	·31	·27842	·56	·54967	·81	·97892
·06	·05218	·32	·28807	·57	·56243	·82	1·00480
·07	·06090	·33	·29778	·58	·57541	·83	1·03200
·08	·06964	·34	·30756	·59	·58861	·84	1·06070
·09	·07839	·35	·31742	·60	·60206	·85	1·09108
·10	·08715	·36	·32736	·61	·61576	·86	1·12338
·11	·09593	·37	·33738	·62	·62973	·87	1·15790
·12	·10474	·38	·34749	·63	·64399	·88	1·19498
·13	·11356	·39	·35768	·64	·65854	·89	1·23507
·14	·12241	·40	·36798	·65	·67342	·90	1·27875
·15	·13128	·41	·37837	·66	·68863	·91	1·32679
·16	·14018	·42	·38886	·67	·70420	·92	1·38021
·17	·14911	·43	·39946	·68	·72016	·93	1·44046
·18	·15807	·44	·41017	·69	·73653	·94	1·50965
·19	·16706	·45	·42101	·70	·75333	·95	1·59106
·20	·17609	·46	·43196	·71	·77060	·96	1·69020
·21	·18516	·47	·44304	·72	·78837	·97	1·81734
·22	·19427	·48	·45426	·73	·80668	·98	1·99564
·23	·20341	·49	·46562	·74	·82558	·99	2·29885
·24	·21261	·50	·47712	·75	·84510	1·00	∞
·25	·22185						

TABLE II.—*Abscissa of Normal Curve.*

$$a = \sqrt{\frac{2}{\pi}} \int_0^x e^{-\frac{1}{2}x^2} dx.$$

a.	x.	a.	x.	a.	x.	a.	x.
·00	·00000	·26	·33185	·51	·69031	·76	1·17499
·01	·01253	·27	·34513	·52	·70630	·77	1·20036
·02	·02507	·28	·35846	·53	·72248	·78	1·22653
·03	·03761	·29	·37186	·54	·73885	·79	1·25357
·04	·05015	·30	·38532	·55	·75542	·80	1·28155
·05	·06271	·31	·39886	·56	·77219	·81	1·31058
·06	·07527	·32	·41246	·57	·78919	·82	1·34076
·07	·08784	·33	·42615	·58	·80642	·83	1·37220
·08	·10043	·34	·43991	·59	·82389	·84	1·40507
·09	·11304	·35	·45376	·60	·84162	·85	1·43953
·10	·12566	·36	·46770	·61	·85962	·86	1·47579
·11	·13830	·37	·48173	·62	·87790	·87	1·51410
·12	·15097	·38	·49585	·63	·89647	·88	1·55477
·13	·16366	·39	·51007	·64	·91537	·89	1·59819
·14	·17637	·40	·52440	·65	·93459	·90	1·64485
·15	·18912	·41	·53884	·66	·95417	·91	1·69540
·16	·20189	·42	·55338	·67	·97411	·92	1·75069
·17	·21470	·43	·56805	·68	·99446	·93	1·81191
·18	·22754	·44	·58284	·69	1·01522	·94	1·88079
·19	·24043	·45	·59776	·70	1·03643	·95	1·95996
·20	·25335	·46	·61281	·71	1·05812	·96	2·05375
·21	·26631	·47	·62801	·72	1·08032	·97	2·17009
·22	·27932	·48	·64335	·73	1·10306	·98	2·32635
·23	·29237	·49	·65884	·74	1·12639	·99	2·57583
·24	·30548	·50	·67449	·75	1·15035	1·00	∞
·25	·31864						

(*To be continued.*)

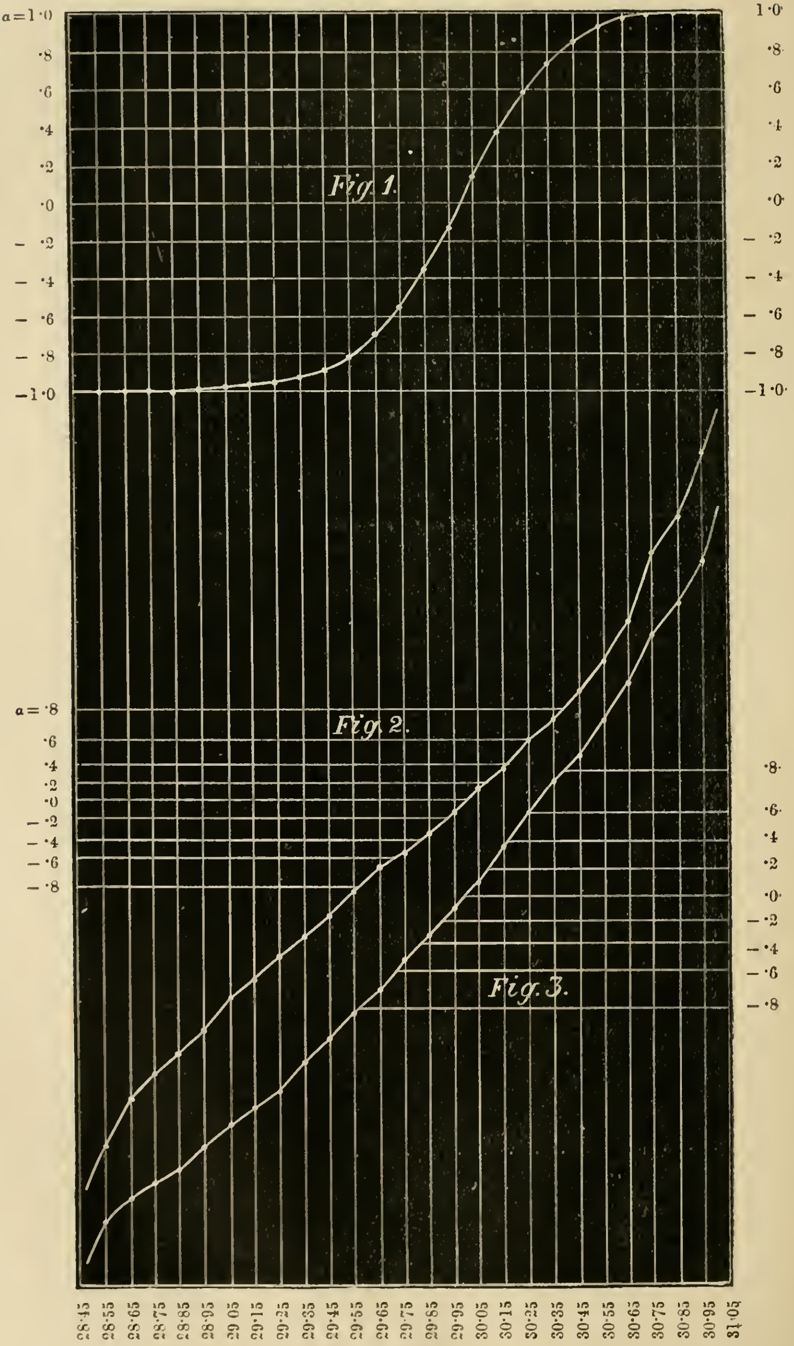
Fig. 1.
a=1·0
·8
·6
·4
·2
·0
– ·2
– ·4
– ·6
– ·8
–1·0
1·0
·8
·6
·4
·2
·0
– ·2
– ·4
– ·6
– ·8
–1·0
Fig. 2.
a= ·8
·6
·4
·2
·0
– ·2
– ·4
– ·6
– ·8
Fig. 3.
·8
·6
·4
·2
·0
– ·2
– ·4
– ·6
– ·8
28·45
28·55
28·65
28·75
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30·85
30·95
31·05

II.—ADDRESS *to the* ECONOMIC SCIENCE *and* STATISTICS SECTION *of the* BRITISH ASSOCIATION, *held at* BRADFORD, 1900. By MAJOR P. G. CRAIGIE, PRESIDENT *of the* SECTION.

THE "Advancement of Science" is the motive wherewith the British Association brings annually together, in autumnal conclave, a gathering of those who desire to tell and those who wish to hear something of the most recent developments of scientific labour. Entrusted for the session with the high honour of presiding over a Section where the chair has from time to time been occupied by a long roll of distinguished men, whose qualifications for the task necessarily far outstrip any I could pretend to claim, I may yet follow the example set by such authorities in maintaining on your behalf, and on my own, that the right production, the proper treatment, and the wise grouping of garnered facts concerning man and his relations to the State as a member of society constitute a study second in importance to no other form of research. Moreover, such expert discussion of statistical methods and statistical results as ought to be possible in this Section should, I think, prove a factor of no small moment in its bearing on the true advancement of Science in its broadest sense, whether physical, economic, or political.

Without the claim to speak to you on the lines which could be appropriately adopted by some former Presidents, who have held positions of eminence, won either in the highest fields of politics or earned by patient work in the cloistered retreats of academic study, I come here rather to represent those who form, as it were, the hewers of wood and drawers of water for the economic controversialists of the day. As such we are concerned in the daily out-turn of raw statistical material, and we are naturally jealous as to the use to be made of our figures by those who employ them in the process of scientific deduction, in the business of practical administration, or in the efforts of philosophic teaching.

Whatever be the precise meaning we are willing to accord to the term of "statistics"—and both the primary interpretation and the proper scope of the expression have been differently construed—I believe you will agree with me in echoing the opinion expressed, I think, by a very distinguished past President of this Association, that nearly all the grandest discoveries in science have been but the rewards of accurate measurement and patient long-continued labour in the sifting of numerical results.

Not only thus may we claim for what is sometimes looked upon as the merely mechanical part of statistical work a directly educational effect on the honest workers themselves, in the training and discipline of mind which are required for the handling and weighing, the balancing and comparing of numerically arranged facts; we may go further and assert that every science in its turn has occasion to rely on the statistician's art, and that the true advancement of knowledge in whatever path we take depends quite as much on the avoidance of rash conclusions as on the faculty of quick perception of apparent results.

There is, then, this lesson to be learned in the discussions to be held in this Section, and it is one on which, in opening our deliberations, I think I am fairly entitled to insist. Since accurate statistical data are fundamental to sound argument and correct deductions in any sphere of science, too great care cannot be expended in the task of making sure that figures given to the public are really what they claim to be. Where a comparison is to be made, it is our business to see a practical identity in the character of the facts to be observed, and to give such warning as is requisite to guard against the possibility of over-strained and illegitimate use of the data by those into whose hands they may ultimately come. Where a deduction is to be made or a conclusion is to be announced by the original compiler himself, it is well, too, he should remember that a statistical decision should have in it something of judicial deliberation and gravity, and should be given to the world only after the application of a chastened scepticism and distrust to the testing of the first impressions to which the bare numbers that appear on the surface of any calculation seem to point.

Lastly, let us not overlook the prescriptive cautions of many past masters in statistical work, to distrust big totals and dissect general averages.

We are all of us familiar with the vastly larger space accorded to statistics in debate in the second half of the dying century, how readily the arbitrament of figures is now appealed to by the politician or the journalist, by the man of science or the philosopher. This very fact, however, constitutes in itself a danger; and I trust, therefore, I may be forgiven if I interpose between the Section and its prepared work by preaching from the Chair with some insistence the somewhat trite doctrine that statistical and economic science has few greater enemies than those who fail to apply the most rigid tests to the sufficiency of the elementary figures on which a theory is to be formed or an administrative act accomplished. Nor, indeed, is a much smaller offence involved in the over-confident use, whether for international comparisons or for those flights of prophecy in which we all like from time to time to indulge, of figures not in their immediate connection themselves erroneous, but which are, nevertheless, not quite strong enough to bear the strain of the superstructure to be reared, or which are devoid of the essential elements of true comparability of condition.

It is, then, alike for the makers and the users of statistics to observe much caution in their own utterances and in the manufacture of those missiles of controversy which every table furnishes, and which in the hasty discussion of our day, when mere rapidity is exalted almost to the place of a virtue, are apt at times to prove dangerous to those who wield them, whether in the press, the lecture room, or the senate.

Of all statistical work the enumeration of the units of population must ever take the foremost place, and on the eve of the census to be taken before many more months have passed, a reference to that great impending task could hardly be omitted on this occasion. In common with all students of the machinery of census-taking, I am sure I echo the feelings of the Section—as I do those of the Royal Statistical Society, who have long laboured in this direction—in deeply regretting that the first census of the twentieth century is not to possess the distinction many have hoped to see conferred upon it, of being by preliminary announcement—as I hope it may prove to be in ultimate fact—the first of a series not of decennial but of quinquennial countings of the people.

The growing complexity of social conditions and speed of life in all its functions at the present date, contrasted with the leisurely movements of a hundred years ago, would alone and amply justify a more frequent stock-taking of the inhabitants of Great Britain than has been the practice in the past. The practical wants of our much-multiplied system of local government cannot fail, I believe, ere long to bring about the granting of an intermediate numbering, even if for the moment other considerations overrule the more academic pleas of statisticians for this reform, or the arguments, sound as I believe them to be, for a permanent Census Office, a permanent Census Act, and a trained and continuous Census Staff, to whom preparation of the machinery beforehand and detailed elaboration of the results after the actual census year might with real economy be entrusted.

Like probably many other students of practical statistical organisation, I have to own to some modification of the demands for inquiry into the condition as well as the numbers of the people, which I once believed might be properly combined with the actual operations of enumeration. Some little experience in measuring the extent and the value of the answers elicited by question and by schedule have shown me that with due regard to the quality, if not even to the quantity, of the replies extracted from the least instructed section of the population, you must limit your curiosity unless you are to be landed in doubt, in difficulty, and in misconception.

Specific and parallel inquiries in point of time by one or another central body may no doubt be devised and directed so as to bring out a definite and limited series of facts, affording matter to be compared with population totals. But to load the census proper with side issues is not to help forward the best type of statistical knowledge, and the attempt may well be pushed too far. I fancy there is now some reason to believe that ten years ago we erred in this respect. For these reasons I have never in recent years been able to go along with many active and highly intelligent foreign colleagues, whose more sanguine aspirations as to possibilities of what a census can tell it is always pleasing to witness, even if the feasibility of their suggested developments may be questioned.

Sound and reasonable advice on such a subject may be found in the timely remarks of my colleague Mr. J. A. Baines, in his paper to the Royal Statistical Society in February last on the "limitations" of census-taking. From no better or more practical source could we hope to be instructed on what can and what can not with advantage be got, than from the able officer whose superintendence of the vast Indian Census of 1891 brought him such widespread recognition.

The mention I have made of the suggestions of foreign statisticians on census-taking reminds me, that although the proposal which has been before the International Statistical Institute in one form or another for a synchronous "world's census," at the moment of passing from one century to another, is hardly likely, for administrative reasons and in view of the previous fixtures of the great census-taking Governments of the earth, to be literally realised, the dates of the great countings of the nations will nevertheless come sufficiently close for all practical comparisons. The great Russian enumeration, on the success of which M. Troinitsky is so heartily to be congratulated, is not yet long accomplished. The twelfth census of the United States is now being taken. The Scandinavian inquiry coincides with the century's end, the Italian and the Spanish censuses are already overdue, and both France and England take their count within a few months after the twentieth century has begun.

Not persons only, but their conditions, their possessions, their trade, and their burdens are all subjects of perennial statistical inquiry, and in connection with the last of these groups in the near future, the attention of statistical critics will no doubt be drawn again to the massive collection of materials respecting local taxes, their growth and pressure, which may be looked for from the final report of the Royal Commission on Local Taxation. How many times in the last half of this century this section of our finance has been debated here I have not been able to ascertain. In one form or another it has exercised a fascination on the minds of some of our most active economists. Personally I confess the field was one of the first in which I ventured to make some inquiry and draw tabular comparisons. To this I was incited by the study not at first of the second-hand stores of the many blue-books which have seen the light on this matter, but rather by the peculiar circumstances of my local residence in a Yorkshire township four-and-thirty years ago, when local government and local rates of necessity came home with primary concern to one who happened, like myself, to be the sole inhabitant householder of an area constituting for several purposes a unit of local administration.

The statistical part of such inquiries as these will abound with problems in the working out of which it will be well to recall the warnings I have indicated as to the danger attending the use of non-comparative or defective data. Pitfalls innumerable await the less wary controversialist in such questions as these, which seem near at hand, while yet wider discussion on the relative pressure and comparative growth of taxes generally may ere long attract renewed attention, as well as the subjects of statistical debate which centre round the records of crime and its punishment, of educational facilities and the economic results of their supervision by the State, or, again, of excursions into the intricate region of labour and wages, wherein some of our section have already pursued useful investigations. In all and every one of these topics the scientific statistician will have to remember that his profession does not allow him to be a partisan advocate of one or the other view, in search of some figures to illustrate or decorate a predetermined theory. On the contrary, his function is to work in the cold, clear light of pure scientific research, and with a single aim to free the facts of each case from obscurity, and place the data before the world in such shape as to allow a true judgment to be recorded.

Quite as full of difficult problems and obstinately non-comparable figures will be found to be the use of statistics of production and of trade. The varying and scanty records of one period may have to be viewed in connection with and interpreted by the better and fuller data of the day, and the conditions of one country may have to be contrasted with those of another, while the puzzling variations in the system employed have to be allowed for and discounted in the conclusions.

Perhaps the difficulties of just comparison between the records of one time and another, or one State and its neighbour, come home to me with peculiar emphasis when the statistics dealt with relate to agricultural conditions. With ourselves, and still more in certain quarters abroad, regular agricultural statistics are of quite recent birth.

Agricultural statistics, whether in this or other countries, are assuredly not exempt from the need of careful and intelligent handling and of caution in drawing comparisons. The leading features to which any agricultural inquiry is directed are naturally the extent and characteristic modes of the occupation of the surface, the number of persons engaged and the size of their holdings, the area and yield of the distinctive crops, and the numbers and classes of live stock. Some of these points can, and others with advantage cannot, be made the subject of direct annual inquiry and compilation. But in all cases questions as to precision of definition arise when the careful investigator looks below the surface to see what the figures really mean.

The total measured areas of the countries we desire to contrast may, it is true, be fairly accurately given, though even here there is room for error, in regard to the practice of including or excluding areas covered by inland and tidal waters, lakes and rivers. When the next step is taken, and it is desired to contrast the respective areas actually made use of for productive purposes, difficulties of comparison at once present themselves. The phrase "cultivated area" in our country is one to which, at least in unofficial if not in Government publications, two distinct meanings are often attached. The term is sometimes used as if in some sense synonymous with the arable surface, whereas in the other, and with us by long tradition the official sense, the term covers all land, other than woodlands or rough wastes and mountain grazings, utilised for agriculture, whether under the category of permanent grass or under yearly varying crops.

Nor is uniformity of practice much greater as regards the methods of returning the actual agricultural population. The number of persons actually employed, male and female, may, as a rule, be distinguished, but all countries are not agreed as to what employment means. The practice as to who are and who are not to be regarded as dependents, or as occasional and casual workers, may vary greatly. In all countries, and perhaps rather more abroad than here, there are many persons who combine an agricultural with some other calling, and this in an infinitely varying degree. The German and some other statistics endeavour laboriously to give tables which take account of these persons with double occupations, and allot to them a place under more than one head. In England we have no provision in our census for these cases, and a farmer and brewer or a labourer engaged sometimes on a farm and at others at other work, may be classed by the accident of the first entry in one or other category at random.

By what is nearly a common consent, the attempted enumeration of the agriculturally occupied population is connected rather with the general inquiries of the census than with the crop returns of each year. Its value of necessity depends on the coincident and relative record of the occupations, other than agricultural, in which the inhabitants of any country are engaged. Such considerations supply the answer to some of our less reflective writers on this question, who would have a perennial investigation going on into the available supply of agricultural labour—year by year, if not month by month. The movement in the direction of concentration of growing numbers of the workers of a nation in the urban districts, which is apparent in so many countries besides our own, and under the most opposite conditions of Government polity or agricultural organisation, will no doubt form in a short time a very interesting topic of statistical discussion. But the general figures cannot be handled with very great advantage now at the distance of well-nigh a decade from the last enumerations and at the moment when the taking of a new census is at hand. Until that inquiry reveals its facts, the student of questions of relative rural population may be referred to the mine of information collected by the Royal Commission on Labour, and the late Mr. W. C. Little's admirable and exhaustive analysis, and to the most valuable statistical buff-book which the Board of Trade have just issued from the pen of Mr. Wilson Fox.

Equally or even more full of pitfalls for comparison are statistics of the size of holdings, whether the comparison be made between one date and another in a country like our own, or between one country and another. Not only will the grades employed necessarily vary between country and country, but the starting point and definition of what is a "holding" is usually entirely different.

In one of the earliest meetings of the International Statistical Institute at Rome, I drew attention to the barrier thus offered to international comparisons on the latter point. I then showed how occasionally it may happen that the recognised "holdings" seem to have included every plot, however minute. Germany and Belgium, and I may add Ireland, apparently made a beginning at zero. Great Britain at one time regarded a quarter of an acre as a limit of statistical inquiry, although since 1892 restricting the term "agricultural holding" to something over an acre of land. Elsewhere, as in Holland and in the United States, refusals, except under specially defined conditions, to take anything less than a plot of $2\frac{1}{2}$ or 3 acres in extent as a starting point in the agricultural enumerations are encountered.

Attempts have no doubt been made to enumerate separately the strips of land held as gardens or allotments, at different dates, in England, but considerations such as I have above indicated have rendered the results of much less statistical value than can be claimed for the yearly returns, and the failures of some of these repeated attempts furnish a conspicuous warning against overloading the never very simple task of rural stocktaking by too frequent and necessarily costly inquiries into very minute points of agricultural condition.

Even in records of the numbers of animals there is room for much misunderstanding. "Horses" are defined differently in the returns of different countries, at one place the numbers including trade and private horses, in another only those engaged in agriculture. The ages and the classes of the animals, and the dates of the collection, again, may and do vary considerably, and this may bring in lambs in one country and omit some portions of this group in another. Even cows, it is found, may mean one thing in one country and another in another, and may be returned with other cattle in a single class or shown separately from other horned stock. Oxen are shown in some countries with no distinction of class or age; in others those still used for working the farm may be distinguished from those reared for purposes of meat production only. All these cautions are only examples of the danger of venturing on too close reliance on data of this kind in international comparisons.

Over and above all difficulties due to difference of agricultural practice and local definitions, the most serious bar to exact comparison of the course of agriculture in different countries, is the widely varying practice as to the intervals at which statistics are collected. Live stock may be enumerated, as with ourselves, in France, or in the United States, annually, while wide gaps occur between the years of stocktaking elsewhere. The acreage of each crop in each season may be recorded in one country; in another five or ten years, in some cases even fifteen, may elapse between the inquiries on this essential point, and produce estimates checked by no local examination of the surface occupied, too often prove delusive guides to the results of particular years. These gaps are the dread of any one who sets himself seriously to examine what has been the general movement either in the changing areas of crop distribution or in the relative growth or decline of agricultural production abroad.

Continuous annual data of acreage, production, and live stock ought, however, to be within the reach of most fully-equipped Governments of modern times. The method of the collection will necessarily differ. Information obtained direct from the immediate producer by written schedule is perhaps available nowhere but in our own land. The fact is one which says something for progressive intelligence and the general support which the State receives from the great bulk of farmers of Great Britain, and the working of our system has attracted much attention of late from those responsible for the conduct and development of agricultural statistics in foreign countries. We may pardonably view our position in this country with satisfaction, when it is recognised how largely foreign correspondents are yearly seeking for more and more information as to how so big a statistical operation is annually accomplished here between 4th June and 28th August, in the time and with the machinery at our command. To the statisticians of Russia, Spain, Italy, Germany, Denmark, and even of Japan, we have had lately to explain our process. Could some approach to this system be obtained, the means for accurate measurement of the world's agricultural movements would be greatly helped, and it may at least be hoped that a generation hence facilities will abound for a closer review of the position of food supply and production than is now feasible. But it is not necessary to wait quite so long for some general glimpse of the facts. Already in France, Germany, Austria, Hungary, Roumania, Russia, and the United States, among foreign countries, in our Indian possessions, and in our Australasian colonies, we find indeed annual statements—not all, however, collected similarly—of the area under the principal grain crops. Two only of the provinces of the Canadian Dominion venture on annual returns. Annual, if later, figures reach us from the smaller States of Holland and Sweden, and from Algeria and Japan.

It is, I think, in the circumstances, not illegitimate to use, at all events for comparison of the state of matters within the same country, the data which are now available from year to year. With less confidence we may even quote, as presumptive indications of the directions of movements, the isolated returns of acreage for particular years which alone some States supply. That there is peril, however, in such a course may be seen by what is proved to have happened in a country like France, whence we do receive continuous data. For the past quarter of a century the acres devoted to wheat in France have been practically the same, 17 million acres. One single exception appears, however, in the season of 1891, when, under exceptional climatic conditions, an area of only 14 million acres was reported. Now, had France rendered only occasional acreage records, like her Belgian neighbour, like Denmark, or like Argentina, and had the year 1891 chanced to be the date of the inquiry, an investigation of the rise or fall of wheat culture in Europe might have been deflected from a true conclusion by the deceptive record of a state of matters occurring only once in a single exceptional season, and immediately recovered from.

In any attempts which may be made, even within the period of fairly reliable agricultural statistics, to trace the features of the changes of the past twenty or thirty years, it is necessary to remember that, as between one country and another, the data can be received only with much reserve, and as strictly comparative, if even that, only within the respective States compared at different dates.

Attempts to utilise statistical data to determine the relative development of agriculture in different parts of the world and at different periods of time, are sometimes made with regard solely to what is described as the world's aggregate of one or two leading individual products as typical of the rest; or, again, one or two typical countries, or at least countries where the available information is more complete than elsewhere, are chosen, and the course of development or decline of their crop areas, or the several descriptions of their animal produce, is traced and compared.

Certain obvious objections, which it is well to recognise, impede the student of figures who resolves to proceed on the first of these methods. At the outset he is arrested by embarrassment attending the choice of what single products are to be held as representative of agricultural out-turn. The most usual of all selections is that which restricts inquiries to the case of wheat. This course appears to be rendered, comparatively speaking, easy, as more has probably been written, and more statistics, official or unofficial, theoretical or commercial, actual or imaginary, have been compiled with regard to this bread grain than for any other crop. But it is time that we recognised that wheat has had too much and too exclusive attention directed to it as a type of agricultural production. Very widely as it is undoubtedly used in the form of bread, even as food its place is occupied at one time or another, and in one country or another, by other substitutes, and its cultivation is, after all, not the employment which demands the most attention and most skill at the hands of the agriculturist. Not only do rye and even maize serve as substitutes or supplements in feeding man, but other crops, such as oats, barley, millet, rice, and so on, have claims to greater notice than they receive, and play a direct as well as indirect part in providing food. Cotton, flax, and wool are other typical products, the use of which for clothing is all-important to an enormous population, and the extension or retrogression of such crops deserves some of the attention of the agricultural statistician. Tea, coffee, wine, spirits, and beer are, it is not to be forgotten, agricultural products in one clime or another, either directly or indirectly; and crops so important as sugar or tobacco are almost to be classed as necessaries of existence. Of yearly growing importance is it also, in these days, when the animal portion of our food supply bulks so much more fully than before in the daily rations of populations as they grow in wealth and increase in consumptive power, that we should closely follow the fluctuations in the live stock maintained for food, and learn the teaching of the agricultural returns on the manufacture of beef, of mutton, of pig meat, or of milk.

The growing requirements of our 40 millions of population in this country—dependent for a large proportion of their meat on cattle, sheep, and swine fed in other lands and in some of the most distant countries of the globe—have provoked a series of inquiries into the extent of our domestic production and the density of the herds and flocks maintained on like areas of the surface of the other and different regions.

It is half a century ago since Sir James Caird, in calling the attention of farmers to what he foresaw was the certain growth of the demand for butcher's meat, for milk, and for butter in the United Kingdom, argued that as the expenditure of the lower classes increased, the development of household outlay with increasing means would necessarily take this direction. Venturing a little beyond the safe ground of statistical deduction as to what was forthcoming from our own stock, it is true that he prophesied that it would not be found practicable to import fresh provisions coming from distant countries, and he therefore suggested that the enterprising home producer would have the full market here practically at his own command. The same authority repeated in 1868 his advice as to the direction the development of agriculture here might take, placing the extent of the reliance of the British consumer on the foreigner at only one-ninth part of his supply of meat, and one-fifth of his consumption of butter and cheese. That these ratios have altered since, to the detriment of the producer, if to the benefit of the consumer, assuredly does not render the need of statistical inquiry into meat and milk production less urgent than it was as a most important factor in the nation's food supply.

Sixteen years ago, when this Association met at Montreal, I ventured to lay before this Section some data on the nature and extent of our meat supplies and the scale of our production, based in the latter case mainly on the very practical investigation of a former President of the Royal Agricultural Society--Sir H. M. Thompson—but adapted to the data of the current agricultural returns of live stock. For numerous purposes the formula I then employed has since been followed as convenient for serial comparisons of annual results in the statistics founded on reports by Royal Commissions and Parliamentary Committees. But no student of statistics will contend that the conditions of agricultural production are ever absolutely permanent, and I have seen there are not wanting opinions that it may be needful, from one cause or another, to revise the scales of the calculation, and to compare the most recent rate of meat production in this country with that of other lands.

Few subjects seem to me to possess more practical interest for those willing to aid in statistical research. competent to apply to the numerical data a corresponding knowledge of the development of stock feeding in recent years and in different countries. I commend a re-investigation of this subject—and the kindred one of milk production and the manufacture of dairy produce in this country and abroad—on the lines in the one case of the inquiry of 1871, and in the other on the lines which Mr. Rew suggested in a paper in 1892 to the Royal Statistical Society—to the best attention of a younger generation of estimators. Whether and how far the earlier maturity of our present breeds of sheep and cattle and swine has resulted in the production of a larger annual volume of meat, is a factor which should have careful consideration. and if a careful inquiry should suggest the time for revision has arrived respecting the 67 tons of beef, the 12½ tons of mutton, or the 69½ tons of pig meat I and others have hitherto used as the equivalent of the annual production of 1,000 animals of each type respectively, I should not be unprepared to make whatever change is proved needful, despite the reluctance with which every statistician forsakes, even on good grounds, a basis of conversion which has served without break of continuity for the comparison of more than thirty years.

How largely the demands of a population like our own have upset the old proportions of our reliance on imported meat and imported milk products, may be learned from the fact that the latest calculation which I have made suggests a meat consumption of no less than 132 lbs. per head in the United Kingdom, against a little over 100 lbs. thirty years ago, more than two-fifths of the whole now reaching us from foreign countries or British possessions, against the ninth part at which Sir James Caird estimated the foreign quota.

The mention of these meat estimates suggests a reference, by way of illustration, to the extremely interesting and legitimate application of the important deductions from purely agricultural statistics possible, when once the temptation to narrow the question to one of wheat production and wheat supply is resisted, which was made by my colleague, Mr. Crawford, in a paper read to the Royal Statistical Society last winter.

Although the attempt to grasp the relative magnitude of the agricultural production of one State as compared with another, or to note the growth or decline of its prominence in the cultivation of particular staples, or the manufacture of particular kinds of human food, is always an enterprise of difficulty in existing statistical conditions, it is one which has fascination for many classes of economists and politicians. If attempted at all it is well to recognise that there are inevitable dangers in the task, and that if any figures are relied on as conclusive, their meaning must be interpreted by some knowledge of the demographic conditions of each State and its geographical, climatic, and agricultural circumstances.

Taking a few of the most conspicuous products of the soil, it will generally be found that a very few leading States are so particularly identified with one or other type of production, that the examinations of their records are therefore available as guides to the course of a single crop.

Probably quite two-thirds of the cotton of the world is grown in the United States alone, where the surface so employed reaches 25 million acres, as compared with under 9 million acres in British India, the next largest cotton-growing region of which statistical record exists. In wool the produce of the Australasian colonies of Great Britain—with flocks which still exceed 100 million head—makes much the largest contribution to the total. In rice, so far as statistics carry us, our Indian possessions head the list of producers. In hops the English crop still probably exceeds the German in production, although the latter, with larger area, closely contests the place. In tobacco, while the acreage apparently employed in British India is nearly double the 595,000 acres in the United States, no other country in our statistical records comes within one-seventh of the American area. The vineyards of Italy are returned as covering 8,500,000 acres, and those of France 4,300,000 acres, while those of Austria and Hungary, next in magnitude, cover but a seventh part of the last-mentioned figure. Russia bulks largely as a grower of flax, and alone shows a whole third of the area of barley recorded in all the countries which supply returns, and if in the case of potatoes the Russian acreage is not very different from that of Germany, the total production of the latter empire reaches the largest aggregate of any single country.

If the subject of inquiry be the place of wheat-growing in the world at one date or another, it would not be of the older European countries, other than Russia at all events, we should turn to see where the surface so utilised was extending. Reckoned by the percentage of the cereal area which she still devotes to wheat, France, with 47 per cent. under the crop, or Italy, with 55 per cent., would naturally be selected as typical wheat growers; but both are practically in a stationary or, collectively, even in a slightly retrograding position. It is on the other side of the Atlantic where the most noteworthy movements have occurred. In comparatively new exporting countries, such as Argentina and Canada, though the statistics from neither are complete, wheat areas still extend, and that of the United States, though fluctuating with great sensitiveness under varying price conditions, and moving from one centre to another westward or north-westward across the American continent, is now reported as covering 44,600,000 acres. This total, it must be allowed, whatever views may be held as to future progress, makes the United States a typical grower of this particular cereal, to which it gives an importance second only to the still more extensive product of American soil, to which we give the name of maize, but to which alone in American parlance is allowed the title of corn.

The leading changes in the production of typical crops as measured by the acreage, and the stock of cattle, sheep, and swine recorded at or near the commencement, the middle, and the close of the past thirty years, may be contrasted for exporting countries with expanding populations and growing agriculture, and in countries where these conditions are absent, or in a typical consuming centre like our own country. Relying on the agricultural returns of the United States, a table could be constructed, as under, for three dates within the past thirty years, which furnish the following indication of agricultural changes:—

United States.	1870.	1885.	1899.
Population, in million persons	38·6	56·1	76·0
Area under maize, in million acres...	38·6	73·1	82·1
,, wheat ,, ...	19·0	34·2	44·6
,, oats ,, ...	8·8	22·8	26·3
,, cotton ,, ...	9·9	18·3	25·0
Cattle (million head)	25·5	43·8	43·9
Sheep ,, ...	40·9	50·4	41·9
Swine ,, ...	26·8	45·1	38·7

In 1870 the United States held, it would thus appear, a population of 38,600,000, and grew an acre of maize for each unit of the population, and an acre of wheat for every two persons, and somewhat more than an acre of cotton for every four. At this period the surplus exported to other nations, it may be added, represented two-thirds of the cotton, rather more than one-fifth of the wheat, but less than 1 per cent. of the maize.

In 1885 the population had augmented to an estimated total of 56 millions, or by 45 per cent. The area under the crops above quoted had meantime been extended in nearly twice this ratio. The United States exported still about two-thirds of the cotton grown; the wheat export was slightly greater in proportion to the product than before, or 26 per cent., while nearly 3 per cent. of the maize crop found a market abroad.

The population of the States is now estimated to have risen to 76 millions, or twice what it was thirty years ago, although the census has yet to say if this calculation has been realised. The cultivation of maize has meantime reached 82 million acres, wheat was reported to cover 44 million acres, and cotton 25 million acres, while the foreign market received 65 per cent. of the cotton, 33 per cent. of the wheat, and now as much as 9 per cent. of the maize grown on these areas.

In none of these cases, it will be noted, has the area under crop failed to increase, but in all the rate of increase was distinctly slower in the second than in the first half of the period. If time sufficed to trace the annual course of movement between the contrasted dates, it might be well remembered that from 1871 onward to 1889, with only a single slight check in 1887, the growth of the maize acreage has been continuous. From 1889 to 1894 fluctuations were reported yearly, ending in the latter year at a total acreage no higher than that of 1880, but returning again in a single year, if the record can be trusted, to the highest point reached. The wheat acreage movement has been more irregular, and the latest figures are complicated by the admitted corrections which were made to an amount of 5 million acres for too low previous estimates in 1897. Allowing for this, the regular upward movement of the wheat acreage was apparently checked in 1880, and has only begun again since 1898 under the stimulus of higher prices in that year.

In live stock the development would seem to have been arrested altogether between 1885 and the end of the century in the case of cattle, and turned into an absolute decline in the number of sheep and swine, although in the fifteen years before 1885 cattle had increased more than 71 per cent., swine 74 per cent., and sheep 25 per cent. As a matter of fact the maximum number of cattle was reached in 1892, when the numbers were 54 millions, or 10 millions more than at present, the stock of swine declining in a still greater ratio from the same year, and sheep declining and rising again in the separate periods between 1883 and 1889, and between 1893 and 1897. If the ratio under each head to population is considered, it would appear that the United States possessed 661 cattle for every 1,000 of her citizens in 1870. This was raised to 829 per 1,000 persons in 1885, while the ratio now has fallen again below the starting point, or to 604 per 1,000 persons. Sheep have fallen in the thirty years from 1,060 in 1870 to 880, and now 537 head only per 1,000 inhabitants. These remarkable changes are worthy of note in connection with the exports of living animals and animal products, which last have been maintained at a still higher level than before.

Turning to a country of nearly stationary population, provided for in the main from its own agricultural produce, with only slight assistance from abroad, a like contrast for the beginning, the middle, and the end of the period under review will give roughly the results shown below. Here, although we are provided with an annual figure, the start has to be made after the Franco-German war with the data two years later, or in 1872. (For table, see below.)

Thus in France, where wheat growing has always had such a predominance among the cereals, the area is neither increasing nor diminishing. The total of 17 million acres falls, however, somewhat short of the provision of an acre to two persons, which held good in the United States; but this is more than corrected by the higher average yield, which is nearly 5 bushels per acre greater in France than in America. Taking wheat and rye together, there are a million acres less of bread corn grown in France than there was when her slow-moving population was 2 millions smaller, or less than 58 acres to 100 persons now, as against 60 acres to the 100 twenty-eight years ago.

France.	1872.	1885.	1899.
Population, in million persons	36·1	38·2	38·5
Area under wheat, in million acres....	17·1	17·2	17·1
,, oats ,, ...	7·9	9·1	9·7
,, rye ,, ...	4·7	4·1	3·6
Area in vineyards ,, ...	6·5	4·9	4·3*
Cattle (million head)	11·3	13·1	13·4*
Sheep ,, ...	24·6	22·6	21·3*
Swine ,, ...	5·4	5·8	6·2*

* In 1898.

The changes which the last quarter of the nineteenth century have seen in the leading features of French agriculture may be easily summarised. The population of 1872 but little exceeded 36 million, that of 1885 reached 38 million, and the latest data only bring it up to little over 38,500,000. The wheat-growing area remains, it would appear, under all conditions practically at 17 million acres, the only break to the general uniformity of the cultivation of this cereal (with which the returns include spelt) occurring in the season of 1891, when, under exceptional climatic conditions, only 14 million acres were harvested.

There is one typical French agricultural product—wine—which has materially declined under circumstances which are well known. The vineyards of 1872, which were reported as covering

6,500,000 acres, are now returned as less by a third of that area, and covering 4,300,000 acres only.

In cattle a material growth up to 1885, but a very small increase since that year, is reported; while if sheep, as in all European countries, are fewer, the fall is less than in Germany, and it is most marked in the first half of the period. Swine in France have steadily increased. As regards the cattle it may be noted that France had 313 cattle to each 1,000 of her people in 1872, 345 in 1885, and 352 per 1,000 now. Of sheep the number per 1,000 is 560, against 681 at the earlier date.

Treating a few of the distinctive points of our own agriculture in the same way at the beginning, middle, and the end of the past thirty years, the statistics of the United Kingdom would give these results:—

United Kingdom.	1870.	1885.	1899.
Population, in million persons	31·2	36·0	40·7
Area under wheat, in million acres....	3·8	2·6	2·1
,, oats ,, ...	4·4	4·3	4·1
,, other corn crops ,, ...	3·6	3·1	2·6
Cattle (million head)	9·2	10·9	11·3
Sheep ,, ...	32·8	30·1	31·7
Swine ,, ...	3·7	3·7	4·0

Here the most striking contrast with France is in the growth of population. From being a country with 5 million fewer inhabitants, the United Kingdom is now one actually greater by 2 million persons than is France. This is an increase of more than 30 per cent., while the surface under wheat has heavily fallen, the main loss occurring under circumstances which have been amply discussed between 1875 and 1895. With some revival, as in America, consequent on an improvement of price in recent years, the slight apparent decline I have shown in the cultivation of oats is in fact confined to Ireland, the area in Great Britain being greater than at the beginning of the period. The cattle stock of the United Kingdom is increased by some 23 per cent., and the swine by about 8 per cent., while our flocks of sheep have been maintained at a level far exceeding that of other European States, and distinctive in a peculiar manner of the agriculture of Great Britain, for they still represent, as it appears, on the average 400 sheep to every 1,000 acres of land, against 164 in France, 81 in Germany, 32 in Belgium, and 17 in the United States.

Passing to a comparison with another great country, which, like the United States, is a typical exporter of more than one form of agricultural produce, it may be asked how far the available statistics of Russia allow such information to be furnished. For the earliest of the three years contrasted the data for the Russian empire are meagre and unsatisfactory. Poland must be excluded as blank in our statistics at that time, while as regards animals no figures at all would appear to have been made public for any of the last twelve years. With such qualifications as these, the available data for the nearest year in the larger crops stood as under:—

Russia in Europe (*ex* Poland).	1870.	1885.	1899.
Population, in million persons	65·7	81·7	94·2‡
Area of rye, in million acres	66·4*	64·6	63·4
,, wheat ,, ...	28·7*	28·9	38·0
,, oats ,, ...	32·8*	34·9	36·1
,, other cereals, in million acres	?	31·4	34·2
Cattle (million head)	22·8	23·6†	(24·6)§
Sheep ,, ...	48·1	46·7†	(44·5)§
Swine ,, ...	9·1	9·4†	(9·2)§

* In 1872. † In 1883. ‡ Census of 1897. § In 1888.

Thirty years ago the population of European Russia, *ex* Poland, would appear from such data as we possess to have been estimated in round numbers at under 66 million persons. It is given as somewhere about 82 millions in 1885, and according to the recent census it is 94 millions now. The bread corn of the country continues to be much more largely rye than wheat, and the area in the year 1872, for which statistics are available, occupied by the former crop was practically an acre to the person, or in all 66,400,000 acres, less than half an acre per inhabitant, or 29 million acres, being under wheat. The combined surface devoted to these two bread grains together was thus 95 million acres in the aggregate, or 145 acres to every 100 persons.

Fifteen years later, when the population was apparently greater by 16 million persons, or 24 per cent., the statistics of rye acreage indicate 2 million acres less than before, or 64,600,000 acres. The wheat acreage, if the official data be accepted, was little if at all in excess of the 1872 figure, the rye and wheat together roughly giving 115 acres to 100 persons. The suggestion of this decline, while the exports of both grains were maintained or extended, affords an opportunity for closer inquiry into the basis of the published returns which are received from that country.

But carrying the review of the official figures further, the very latest data for this section of the Russian territory would appear to indicate a yet further shrinkage in the acreage of rye, but accompanied now, as was apparently not the case until lately, by a considerable increase in land under wheat. The total of this cereal is now put as high as 38 million acres, but the net available area of bread stuffs, although brought up to 101 million acres, represents a still diminishing ratio to population, or 107 acres to every 100 persons. Moreover, as Russia must be regarded as growing both wheat and rye for export as well as consumption, the larger proportions of her acreage which is employed in feeding a non-Russian population deserve to be specially marked in this connection, when the low yields of both cereals are remembered.

Whether the foregoing figures do indeed represent the facts of each period is, I think, a worthy object of inquiry for some of our younger statisticians, and it is a problem one would like to see solved as regards this particular country before venturing on any too confident conclusion as to what is the real meaning of the changes of the past, and what may be the future position in regard to the growth of breadstuffs and the growth of population in the world as a whole.

Calculations, however, such as those just quoted cannot fail to remind the student how very different in productive power the "acre" of wheat may be, and is, in different countries. Assuming that we take the existence of 38 million acres as reported of wheat land in Russia in Europe (*ex* Poland) to be proved, a comparison of the estimated yields shows that such an area represents less than 12 million acres of the productive power we are accustomed to in Great Britain. So, too, for the vast wheat area of the United States, it takes 2½ acres to produce what is now our average yield in this country. Three Indian or three Italian acres of wheat of the calibre now in use would in the same way be required to supply the number of bushels that a single acre of our soil in the climate we enjoy, and worked under the system of farming that we practise here, would in ordinary seasons produce. In other extensive areas of wheat growing the yields, though greater than the above, are very considerably below our own, the Austrian, Hungarian, and French yields standing at 16, 17, and 18 bushels respectively, against the 30 bushels which is apparently the average yield of the last five years in the United Kingdom. Only when we come to very small total areas do we find instances where the average wheat yields approach, or over any considerable periods exceed, our own. When Denmark, for example, is referred to as reaching 42 bushels per acre in the season of 1896, it is not to be forgotten that only a minute area of selected land, in this case only 84,000 acres, is devoted to this cereal. Results realised on this small scale can hardly be spoken of as an average in contrast with those of countries where millions of acres are grown, and can usually be paralleled in some sections of the bigger country.

Nor should it be forgotten, if the agricultural position of one State be compared with another, how widely the conditions of different parts vary from the picture presented by the average figures credited to the State as a unit, and how often sections of one country differ more from each other agriculturally than from the country with which they are contrasted. Within the United Kingdom alone we are, or ought to be, familiar with essential local differences of this type, which have to be kept in mind. Even in respect of the relative density of population and the number of mouths to be sustained in a given area, it may be quite correct to describe every 1,000 acres in the United Kingdom as carrying on their surface on the average 519 persons, but it may be remembered with advantage that, considered geographically apart, Scotland, for example, is a country of but 220 persons, and Ireland is but 219, to the 1,000 acres of area.

Such a position suggests that it might be fair to draw our agricultural comparisons between Scotland or Ireland as units of area, and such a country as Denmark, where the population is 248 to the 1,000 acres. Thus one-third of the cereal area of England is still devoted to the growth of wheat, while Denmark has but 3 per cent. so occupied, thereby resembling Scotland or Ireland, where some 4 per cent. only of the corn is wheat. Similarly, on this population basis, Austria with 320 persons, or Switzerland with 311 to the 1,000 acres, may be not inappropriately classed with Wales, where the density is 345. In particular an examination of the live stock maintained by each 1,000 acres of the surface in all these cases affords parallels and contrasts which are both interesting and instructive. (For table see below.)

Thus Wales bears easily the palm as regards the total stock of sheep carried, while Ireland, with a population practically bearing a similar ratio to that of Scotland to her surface, has more than three times as dense a stock of cattle and more than eight times as many pigs, although not much more than half as many sheep to the 1,000 acres. Although beaten as regards the number of pigs maintained on a given area by Denmark and by Hungary, Ireland's cattle are more than twice as numerous relatively as those of France, where the population is not so very different in proportion to the soil.

Country.	Per 1,000 Acres of Total Area.			
	Persons.	Cattle.	Sheep.	Swine.
Ireland	219	217	207	61
Scotland	220	64	390	7
Hungary	232	85	102	92
Denmark	248	186	115	88
France	293	103	164	48
Switzerland	311	132	27	57
Austria	320	117	43	48
Wales	345	147	685	50

Among countries where the areas are still greater in proportion to the resident population it may not be without interest to group together—as regards their present density—persons, cattle, sheep, and swine.

Countries.	Per 1,000 Acres of Total Area.			
	Persons.	Cattle.	Sheep.	Swine.
New South Wales	7	10	221	1
New Zealand	11	18	294	3
Victoria......................	21	32	234	6
Norway......................	26	13*	18*	2*
United States	32	19	17	17
Sweden	49	25	13	8
Russia (*ex* Poland)	66	20†	36†	7†

* In 1890. † In 1888.

Such figures serve to emphasise the vast difference between the flocks maintained in our Australasian colonies and the other countries in this group.

The animal wealth of England by herself, admitting the Celtic fringes above quoted, may be compared with a nearer competitor. Belgium has 893 persons to 1,000 acres, England 925; and Belgium has 195 head of cattle and 160 head of swine, but only 32 sheep, on an average area of this size in her little kingdom, against 144 cattle, 64 pigs, and as many as 488 sheep in England. Were the comparison to be made more closely yet, the cattle stock of Belgium agrees nearly in point of density with, say, the particular division of our area comprising the north-western counties of England, which have 194 cattle to 1,000 acres, or considerably more than the great butter-exporting country of Denmark, and at least a very close approach to the 197 head per 1,000 acres which are to be found in the fat pastures of the Netherlands.

These limited comparisons on single points of agricultural production in single countries do not, I know, satisfy the demands which are often made for world-wide surveys and comparisons on a larger scale. I confess I somewhat distrust the strength and due coherence of the statistical bricks on which these heroic conclusions are built up. It is most usual in corn trade journals, and the practice is sometimes followed in serious debate and reproduced in the year books of the United States Government, to give a yearly picture of at least the world's wheat crop. For the close comparison of one season with another much must depend on the sufficiency of the weakest item in the account; and weakness is sure to creep in somewhere, when crops are estimated on varying systems, at different dates, and on authorities of unequal value. The definitions adopted by one calculator as to the limits of the "world" vary from those of another, and commercial estimates, as they are called, may be, at the discretion of the computer, substituted for or adopted in the absence of official data, so that the guesses at a single country's harvest may differ more widely from each other than would account for the total margin between one year's aggregate supply and another, to the confounding of satisfactory conclusions as to what is really happening. Last, but not least, of the obstacles to uniform grouping of harvests in complete years—ending as these years do at different periods—is the fact, not to be overlooked, that wheat harvests are being gathered somewhere in every month in the twelve.

One is driven back then to the attempt to rest opinions on the growth of one form of culture or another on recorded acreage, rather than assumed production. Yet even here a good illustration of the difficulty of any extensive compilation may be found in the tentative memorandum Sir Robert Giffen put before the last Royal Commission on Agriculture, as indicating, with many necessary reservations and qualifications, the relative movements of grain area, live stock, and population in the twenty years before 1893. Briefly, the earlier totals brought into conjunction for this purpose were made up, as regards the population figures taken to represent the starting point of 1873, from the statistics of groups of countries and colonies at dates for the most part about 1871-73, but in some instances ranging back to 1866 and on to 1881, and aggregating 365,800,000 persons. Against these were set a total of 461,800,000 persons, enumerated, for the most part, about 1890-93, but in a few instances, where later data were wanting, going back to 1880-88, the growth of population between the totals being 26 per cent.

The acreage about 1873 and about 1893, contrasted with these figures, included wheat, rye, barley, and oats, but not maize—a larger crop than any of the last three. The countries contrasted were limited necessarily by the extent of information, and the list did not include all of which the population was accounted for, the increases respectively being 28 per cent. in the case of oats, 19 per cent. in the case of wheat, 5 per cent. in the case of barley, with a decrease of 5 per cent. in rye. It should be observed, however, that the calculation as to the increase of wheat would have been much closer to that of population had not a very large area, nearly stationary in amount, been credited to India and Japan at both dates; the local population of these Asiatic countries being disregarded as, generally speaking, non-wheat-eating.

It was only as an outline pointing the direction in which inquiry might be useful that Sir Robert Giffen called attention to these figures, which, as he acknowledged, were of the roughest possible description, and rather suggestive of a closer inquiry, which should take account of the difference between the consumptive power of the countries aggregated, the varying productive power of nominally equal areas of surface, and the varying type of live stock maintained.

If the wheat acreage table, in the memorandum referred to, is examined in detail, a very effective picture of the difficulty of exact comparison as between any two given dates is incidentally presented. Out of 24 countries enumerated (including Canada and Australasia as units), a twenty or twenty-one years' comparison is only really effected in five cases—Russia, the United States, France, United Kingdom, and Australasia. In five other instances the period dealt with is only from seventeen to eighteen years; in three other cases, only fourteen or fifteen years. In Canada, Egypt, and Denmark the comparison will be found to be more limited still, and only to cover eleven or twelve years; while in the Argentine Republic, where the recent expansion of wheat growing has been prominent, the available statistics allowed only of a comparison of two periods no more than nine years apart. For seven other countries the wheat acreage was necessarily either omitted or inserted as presumably the same at both the earlier and the later date. Had the retrospect been confined to the cases where a twenty or twenty-one years' comparison was possible—and these, after all, included the most important and typical wheat-growing communities—the increase would have stood, not at 19, but at 24 per cent., or scarcely below that of the growth of population generally. This result is reached without taking account of any South American figures, where the increase of area is relatively much greater, or of those of India, where the comparison is difficult and the acreage growing but slightly. But, further, it is to be remembered that if the comparison of the memorandum were to be continued up to 1899, instead of stopping at 1893, the figures would have shown that wheat growing had apparently made a new start in the five important countries for which the long comparison was possible, as many million acres having been added in the past six years as in the whole preceding twenty—a result which may afford much occasion for suspending our final judgment, and no little warning of the danger of single-year contrasts.

Since the above calculations were before the Commission, there has been an extension of 10 million acres in the official estimates of wheat areas in the United States, and 5,400,000 acres in Russia; while, although official details are still wanting beyond 1895 for Argentina, nearly 3 million acres more were in that year accounted for in that Republic; and there is an impression, apparently well founded, that by the present time the total may have reached 8 million acres, or nearly 5 million acres more than the final figure in Sir Robert Giffen's calculation. If anything like 20 million acres have thus been added to the wheat-growing surface of the globe in the last five or six years, which these further figures suggest, even if no correction be made for the Indian quota, there may be much less difference than was suggested in the memorandum between the growth of population and wheat growing.

Without attempting in any way to controvert what was one of the lessons of the memorandum I have been examining, as to the tendency to increase the numbers of cattle at a ratio above that of population, it has also to be remembered that the apparent 37 per cent. increase there shown between 1873 and 1893 may have to be discounted by subsequent deductions in the United States, in Australasia, and at the Cape in recent years; while it is one of the problems I have never yet seen satisfactorily answered, why, in almost all old countries, except our own, the diminution of the stock of sheep seems continuous and remarkable. I mention these matters only, however, to suggest the amount of uncertainty which must attend the efforts to arrive at conclusions, made even by the highest authorities, on the only data which exist. If there is, as I have shown, such uncertainty still in the facts on which a conclusion could be built as to the past history of the relative growth of live stock, or of cereal culture and the supply of breadstuffs, how much greater must the difficulty be of those who attempt, on the basis of such data, to forecast the course of events for a generation yet to come! I confess I am not intrepid enough to follow some of the conjectures which have been hazarded on this point, and can only, in concluding this address, recur once more to the prime qualifications for safe statistical deductions with which I opened my remarks—redoubled caution in handling calculations, a very guarded use of data giving records of single and isolated years, and a wise reservation in any prophetic pictures of the future of agricultural production, whether of wheat or cotton, in meat or in wool, of the contingency, always present, of altered conditions, which ever and anon in the past have altered and falsified the predictions of earlier observers.

III.—*Price Movements in the Foreign Trade of France.*

By A. W. Flux, M.A.

More than twenty years ago there appeared in the *Économiste Français* an article by M. de Foville, in which the official records of the foreign commerce of France were employed to throw light on the price-changes which had occurred in the period covered by the available figures. A translation of this article was given in the December Number of the *Journal of the Royal Statistical Society* for 1879. It is the object of the present paper to continue some of the comparisons then made by M. de Foville and to place side by side the results of two different modes of calculating the price-changes over a small part of the period to which the tables relate.

M. de Foville pointed out that, previously to the year 1862, there was made an official valuation of the French imports and exports, which was, in fact, a valuation of the actual trade on the basis of the prices officially fixed in 1827. From 1847 onwards there was also made a return of the trade according to its real value. The comparison of these real and official values enables the price-level of each year from 1847-62 to be compared with that of 1827. After 1862 the valuation at the prices of 1827 was discontinued, but from that date we have, as before it, two valuations of the trade of each year, which serve to enable the comparison of price-movements to be carried on. These two are:—a preliminary estimate in which the prices of the preceding year are employed in evaluating the imports and exports: a final estimate embodying such changes as result from the substitution of the officially ascertained prices of the year to which the trade belongs for those of the previous year. It is obvious that the final figures exceed or fall short of the preliminary figures in the same proportion as the average of prices of the year is above or below that of the preceding year. By their comparison an index-number is obtained which is a weighted arithmetic mean of the prices of the articles entering into the section of trade considered, the weights being determined by the relative importance in the trade of the different commodities. These weights vary from year to year according to the changes in the import or export of each article.

The results of the two modes of comparison before and after 1862, as given by M. de Foville, are as follows:—

Price-Level of each Year as compared with that of 1862 *taken as* 100.

	Imports.	Exports.		Imports.	Exports.
1827	81	96	1862	100	100
			'63	102·5	100·8
1847	80	78	'64	104·5	101·3
'48	69	80	'65	99·2	97·8
'49	76	87·5	'66	93·5	91·5
'50	82	91	'67	89·7	87·0
'51	80	90	'68	87·2	83·5
'52	81	98	'69	86·6	82·9
'53	88	109	'70	89·3	81·2
'54	91	108	'71	93·9	81·4
'55	95	104	'72	97·3	83·3
'56	106·5	111·5	'73	96·1	80·3
'57	105	110	'74	89·9	76·6
'58	92	102	'75	86·7	73·8
'59	95	109	'76	87·5	73·9
'60	98	105	'77	85·5	72·9
'61	99	99	'78	80·0	68·8
'62	100	100			

In this table we have: on the left, the results of a comparison of the value of the trade of each year with what it would have been at the prices of 1827; on the right, the results of the compounding of the price-changes from year to year which are given by the evaluation of the trade of each year at the prices both of the year to which it belongs and of the preceding year. By linking the two sets of figures together we secure a view of price-changes over half a century. The material available since the date of M. de Foville's article enables us to continue the right hand side of the table, by the same mode of comparison, for a further twenty years, and thus get a continuous record of price-changes for over half a century, together with a note of the comparative level attained twenty years before the continuous series of figures begin.

I have recalculated the figures, using the records of trade as given in thousands of francs, *i.e.*, with seven significant figures, and recording the results to two places of decimals. It is not at all probable that there is any serious advantage in going beyond the nearest integer, but occasionally that would cause rather small changes to be lost sight of, so that it is as well to retain the fractions. I find some quite trifling discrepancies between my results and those of M. de Foville; how small will be seen by comparing the preceding table with that which follows. To avoid all risk of misunderstanding, I have judged it best to give the earlier as well as the later series according to my own calculations; for even a small difference in the point of departure may result in a difference not negligible at the end of a lengthened series of compounded ratios.

Price-Level of each Year as compared with that of 1862 *taken as* 100.

	Imports.	Exports.		Imports.	Exports.
1863	102·51	100·77	1881	80·74	70·85
'64	104·50	101·28	'82	78·30	70·42
'65	99·30	97·76	'83	75·33	68·96
'66	93·71	91·71	'84	72·29	66·54
'67	89·87	87·19	'85	70·10	64·52
'68	87·37	83·69	'86	69·67	63·52
'69	86·80	83·08	'87	65·68	62·33
'70	89·50	81·46	'88	66·55	63·03
'71	94·08	81·67	'89	68·81	64·69
'72	97·44	83·51	'90	69·03	65·27
'73	96·22	80·54	'91	66·87	64·24
'74	90·05	76·87	'92	63·47	62·40
'75	86·72	74·01	'93	62·13	62·92
'76	87·56	74·13	'94	58·08	59·14
'77	85·55	73·11	'95	58·41	58·89
'78	80·08	68·98	'96	57·82	58·83
'79	80·09	70·47	'97	57·18	57·58
'80	82·12	71·86	'98	58·44	57·71

If we consider this table carefully we observe that the changes of price-level have been in many respects similar as affecting both imports and exports, but the degree in which these two sections of trade were influenced by the great elevation of prices in the early seventies was widely contrasted. The prices of imports rose more rapidly, and to a higher level, than those of exports, a fact not difficult to account for. After 1873, however, the imports have felt the effects of reduction of prices in a greater degree than the exports, and that to such an extent as to bring the figures of comparative prices to practically the same level on both sides in the last half-dozen years of the table. Another point not unworthy of attention is that, if we regard the export figures by themselves, we find a practically continuous fall in price-level from 1864 to the end of the table. The elevation of prices in the early seventies shown by these figures is not more striking than the recovery to 1880, and not as important as the rise which culminated in 1890.

If we may regard the prices of imports and exports as affording a measure of the movement of wholesale prices in France, the change of price-level recorded for that country between the early sixties and the late nineties does not differ much from that shown for our own country by Sauerbeck's index number. The intermediate changes cannot be as closely compared because of the different course of the two numbers in our table, and I do not propose on this occasion to attempt to compound from these two a single number to represent the general price-level of France, or even to contend that such a number could be approximately derived from them.

We proceed to the second part of the present paper, in which some of the figures given in the *Tableau Décennal du Commerce de la France*, 1887-96 enable us to compare two measures of price movements in French foreign trade over the decade indicated. In the official publication named there are given the results of a valuation of the trade of each of the years from 1887 to 1896 at the prices officially fixed for the latter year. We have, therefore, some material for comparing the results of the modes adopted by M. de Foville for obtaining measures of price movements anterior to and subsequent to 1862. We can, in fact, apply the two methods to one and the same period, though the length of the period is somewhat short, as it extends only to ten years. The results are set out in the following table:—

	Imports. (Special Trade.)			Exports. (Special Trade.)		
	Value in Millions of Francs.	Price-Level compared with 1896.		Value in Millions of Francs.	Price-Level compared with 1896.	
		a.	*b.*		*a.*	*b.*
1887....	4,026	113·6	111·7	3,246	105·9	108·8
'88....	4,107	115·1	113·4	3,247	107·1	108·4
'89....	4,317	119·0	118·6	3,704	109·9	111·9
'90....	4,437	119·4	118·8	3,753	111·0	112·7
'91....	4,768	115·7	115·6	3,570	109·2	109·9
'92....	4,188	109·8	111·0	3,461	106·1	107·0
'93....	3,854	107·5	107·7	3,236	107·0	107·5
'94....	3,850	100·4	101·0	3,078	100·5	101·2
'95....	3,720	101·0	101·1	3,374	100·1	100·3
'96....	3,799	100	100	3,401	100	100

a Results of comparing each year with the preceding, and compounding.
b Results of direct comparison of each year with 1896.

On the import side the table shows entirely insignificant differences resulting from the two modes of comparison, excepting the two years most distant from the year of reference, the years 1887 and 1888. In these the differences amount to about 1½ per cent. On the side of exports, differences of an importance corresponding to this occur earlier, and the figures for 1887 differ by some 2¾ per cent., but in the opposite direction to that of the difference in the figures for imports.

If we express these differences otherwise, their importance may be more distinctly seen. The actual value of the imports of 1887 was returned as 4,026 millions of francs. At the prices of 1896, according to the *Tableau Décennal*, the value would have been 3.604 millions. The imports of 1896 were valued at 3,799 millions, so that the increase of volume of trade corresponds to a value of 195 millions, in place of the apparent decrease. But, if we take the mode of calculation used to obtain the Col. *a* of our last table—*i.e.*, if we compound the ratios of increase of each successive year which are obtained by comparing the value of each year's imports with that of the preceding year, the prices of that preceding year being used to obtain both the totals thus compared—we find that the growth in volume of imports is such as corresponds to an increase from 3,544 millions to the 3,799 millions of 1896, an increase of 255 in place of 195 millions.

Turning to the exports, the total for 1887 was 3,246 millions, which, at 1896 prices, as given in the *Tableau Décennal*, would have been worth 2,983 millions. In 1895 the exports were valued at 3,401 millions, a growth of 418 millions. The increase in the volume of trade measured in accordance with Col. *a* of our table was in the proportion of 3,066 millions, increasing to 3,401 millions, or an increase of 335 millions, in place of 418 millions.

Those who desire to see imports grow slowly and exports expand rapidly, will, perhaps, find more comfort in the figures of the *Tableau Décennal* than in the result of compounding the ratio of increase from year to year. Roundly, the amounts given by the latter method as a measure of the increase of trade in nine years, must be reduced or increased respectively (*i.e.*, for imports and exports) by one-fourth to obtain the amounts given by the former method, certainly no negligible difference.

Divergences between the results of such different methods of calculation might be expected. Opinions will differ as to which of the two gives the better indication of price movement. Certainly the difficult task of allowing for the growth into importance of commodities unknown or insignificant at the earlier dates, and of the disappearance of some which were then important, is very readily achieved in the year to year comparison, hardly possible in the other. The object here aimed at is to set alongside each other the results of the two methods of calculation, a matter of some interest in connection with a record of price-change, of which the earlier part depends on one method, the later part on the other.

It would be wrong to suggest that the two methods are *likely* to yield, over a prolonged period of time, results constantly diverging in such proportion as those here obtained. In successive periods divergence may quite possibly take place in opposite directions, and both methods yield practically the same result in the long run, somewhat as the different courses of import and export prices between 1862 and 1898 show at one time considerable divergence, but give results substantially identical at the end of the period.

The writer was, unfortunately, not acquainted with the article of M. de Foville when, early in last year, he opened the subject of this note in the course of a paper presented to the Manchester Statistical Society. The figures of that paper have been revised and reduced to the basis necessary for direct continuation of the tables of M. de Foville, namely, the basis of 1862 instead of that of 1897, which was used in the paper in question.

IV.—*The Statistics of Wages in the United Kingdom during the last Hundred Years.* (Part VII.) *Wages in the Building Trades*—Contd. *Scotland and Ireland.* By A. L. Bowley, M.A.

In the accompanying tables the general scheme is the same as that adopted for England. Those towns have been selected for which material exists both before and after 1860; and we may safely neglect the remainder of the more copious modern material when we take an average for the whole country, for the figures relating to the towns thus chosen form a very good sample of the more numerous recent records. From 1862 to 1892 the records of the Scotch Carpenters' and Joiners' Association (see 4th *Report on Trade Unions*) are very full and detailed. A witness before the *Labour Commission* (V, Part II, p. 284) handed in a table of masons' wages for several important towns for various dates since 1869. The *Returns of Wages*, 1830-86, afford information for Aberdeen (1877), Belfast (1855, 1856, 1857, 1860, 1861, 1871, 1874), Cork (1855-61), Dublin (1857-61 and 1863), Edinbugh (1840, 1850, 1855-57, 1860, 1861, 1866, 1880, 1883), Glasgow (1810-19, 1831, 1856-61, 1863, 1880, 1883), and Londonderry (1821-34). Otherwise the sources of information since 1860 are the same as for England; and, as before, figures comingfrom trade union sources are distinguished from all others by this type $\overset{s.}{40}\ \overset{d.}{4\frac{1}{2}}$.

The material for years previous to 1845 is chiefly to be found in the *Statistical Accounts* of Scotland, 1791-99 and 1833-45. In the volumes containing these accounts very numerous records are found of the wages of masons and carpenters (joiners, wrights) for villages and towns throughout Scotland. In some cases in the first part of the following table the wages given for the towns are in reality the averages of the corresponding counties; but the difference found where comparison was possible was surprisingly small, especially in the earlier account. When these figures are analysed, no evidence is found of any change between 1790 and 1798, or between 1832 and 1843; but since few comparative figures are given in either period, and the exact dates to which the figures refer are often doubtful, no positive conclusions can be drawn from this apparent stationariness. The figures may be tabulated as follows:—

Summary of Statistical Abstracts of Scotland. Daily Wages of Masons and Carpenters.

Col 1. Daily Wage at	1790-98. Number of Villages where Wages were as in Col. 1.		Col. 4. Daily Wage at	1832-43. Number of Villages where Wages were as in Col. 4.	
	Of Masons.	Of Carpenters.		Of Masons.	Of Carpenters.
s. d.			s. d.		
– 10	0	1	1 –	1	1
1 –	9	28	1 3	0	1
1 1	1	1	1 4	1	0
1 2	5	25	1 6	4	8
1 3	9	12	1 8	4	6
1 4	15	26	1 9	2	3
1 6	60	76	1 10	2	5
1 7	3	0	2 –	63	96
1 8	90	48	2 2	3	4
1 9	2	2	2 3	6	8
1 10	18	11	2 4	17	5
1 11	1	0	2 6	143	117
2 –	51	18	2 8	8	11
2 2	1	0	2 9	2	0
2 3	1	0	2 10	5	3
2 4	0	1	3 –	70	49
2 6	2	1	3 4	4	5
2 8	2	2	3 6	16	8
			4 –	3	2
	270	252		360	332
	s. d.	s. d.		s. d.	s. d.
Averages	1 8	1 6	—	2 6	2 5

The original figures are in many cases vague, and it is often not possible to decide whether they refer to unskilled or skilled labourers, or even to small employers, nor are the statements as to free food (for which allowance has been made in the above table) always definite; but in the tabulation there is no doubt as to the averages; the mode, the median and the arithmetic average coincide in nearly every case. We find thus an increase of 50 per cent. in wages between the two accounts, and this estimate is confirmed by the few instances where comparisons are made in the later account. When these figures are compared with those of recent years, regard must be paid to the growth of the large towns when wages are highest.

The earlier account gives a little, but fairly consistent, information as to the course of wages in the eighteenth century, which may be tabulated as follows:—

Approximate Daily Wages (Without Food).

	Between 1730 and 1745.	Between 1745 and 1760.	Between 1760 and 1777.	1791.
	d.	*s. d.*	*s. d.*	*s. d.*
Carpenter	9	1 –	1 –	1 6
Mason	10	1 2	1 2	1 8

The earlier Irish figures come from a few statistical accounts of Irish counties, or from Arthur Young's *Tour in Ireland*. In the following tables different classes of information relating to the same years have been placed in different horizontal lines. In the same horizontal lines the figures are generally strictly comparative, and in many cases are consecutive records from single authorities. The abbreviations (M., mason, Ps., plasterer, &c.) are as before, except that L stands for *mason's* labourer in the Scotch figures.

Building Trades. Summer Weekly Wages. SCOTLAND AND IRELAND.

Years		Before 1790.	1790 to 1800.				1801 to 1832.					1833 to 1843.			1862.	1863.
SCOTLAND.		1765. *s. d.*	1791. *s. d.*	1796. *s. d.*								1840-42. *s. d.*			*s. d.*	*s. d.*
Aberdeen ...	C.	6 -	6 -	9 -			—					14 6			19 -	19 -
		—	—	—			—					—			—	—
	M.	6 -	7 6	9 -			—					16 -			—	—
	B.	—	—	9 -			—					—			—	—
	L.	—	—	5 - to 8 -			—					—			—	—
			1791. *s. d.*													
Alloa	C.	—	10 -				—					—			20 -	20 -
	M.	—	10 -				—					—			—	—
		1791.	1812-13. *s. d.*	1814. *s. d.*	1815. *s. d.*	'16-17. *s. d.*	1818. *s. d.*	'19-20. *s. d.*	'21-22. *s. d.*	1823. *s. d.*	1824. *s. d.*	1825. *s. d.*	1826. *s. d.*	'27-33. *s d.*		
Arbroath......	C.	8 -	—	—	—	—	14 -	14 -	14 -	14 -	14 -	17 -	15 -	12 -	18 -	18 -
	M.	10 -	12 8	11 7	10 -	9 -	11 4	9 -	10 -	12 7	14 -	14 1	10 3	10 3	—	—
		1773.	1790. *s. d. s. d.*	1792. *s. d.*								1836-47. *s. d.*				
Ayr	C.	—	7 6 to 10 6	12 -			—					15 -			22 -	22 -
	M.	6 -	7 6 ,, 10 -	12 -			—					15 -			—	—
		1760.	1792. *s. d.*	1795. *s. d.*			1808. *s. d.*	1810. *s. d.*	1814. *s. d.*	1819. *s. d.*	1826. *s. d.*	1827-38. *s. d.*				
Cupar	C.	—	—	—			—	—	—	—	—	—			—	—
		—	9 -	10 -			15 -*a*	15 -	15 -	15 -	15 -*a*	15 -			—	—
	M.	6 -	9 -	11 -			—	18 -	14 -	15 -	17 -	15 -			—	—
			1792. *s. d.*									1839. *s. d.*				
Dumbarton	C.	—	10 6				—					17 6			26 -	26 -
	M.	—	11 -				—					17 -			—	—
			1790-92. *s. d.*	1793. *s. d.*								1833-35. *s. d.*				
Dumfries ...	C.	—	9 6	11 6			—					15 -			21 -	21 -
	M.	—	10 -	12 -			—					15 -			—	—
	B.	—	12 -	12 -			—					15 -			—	—
	S.	—	12 -	12 -			—					15 -			—	—
			1792. *s. d.*									1835. *s. d.*				
Dunbar	M.	—	10 -				—					15 -			—	—
			1793. *s. d.*									1833. *s. d.*	1859. *s. d.*	1861. *s. d.*		
Dundee(*b*) ...	C.	—	8 3				—					—	—	—	21 -	21 -
		—	—				—					about 16 -	18 -*b*	19 5	—	21 5
	M.	—	11 -				—					—	—	—	—	—
		—	—				—					about 12 6	21 4*b*	23 2	—	25 6
	Pa.	—	—				—					—	—	—	—	—
	L.	—	—				—					—	13 1*b*	14 5	—	14 5
		1763.	1794. *s. d.*									1838. *s. d.*				
Dunfermline	C.	4 6	9 -				—					16 -			—	—
	M.	5 -	10 -				—					18 -			—	—
			1797. *s. d.*									1835. *s. d.*	1842. *s. d.*			
Elgin	C.	—	6 9				—					14 -	13 -		18 -	18 -
	M.	—	8 3				—					15 -	15 -		—	—
		1786.	1792. *s. d.*									'32-35. *s. d.*	1838. *s. d.*	1842. *s. d.*		
Forfar	C.	6 9	8 3				—					13 6	14 6	15 -	16 -	16 -
	M.	8 3	11 -				—					14 6	18 -	15 -	—	—

Building Trades. Summer Weekly Wages. SCOTLAND AND IRELAND—*Contd.*

Years		Before 1790.	1790 to 1800.	1801 to 1832.	1833 to 1843.	1862.	1863.
		s. d.				*s. d.*	*s. d.*
Galashiels ...	C.	—	—	—	—	—	—
		—	—	—	—	—	—
	M.	—	—	—	—	—	—
			1790-95.		1834-38.		
		1760.	*s. d.*		*s. d.*		
Haddington	C.	6 -	9 -	—	16 -	—	—
			1792.		1834-36. 1839-40.		
			s. d.		*s. d.* *s. d.*		
Inverness ...	C.	—	—	—	— —	17 -	18 -
		—	7 -	—	13 6 12 -	—	—
	M.	—	—	—	— —	—	—
		—	9 6	—	14 9 14 -	—	—
			1790-91 1793. 1794.	1812. 1823.	1844.		
			s. d. *s. d.* *s. d.*	*s. d.* *s. d.*	*s. d.*		
Kirkcud-bright ...	C.	—	8 - 10 - 11 -	— —	16 6	—	—
	M.	—	9 - 10 6 11 -	18 - 15 -	16 6	—	—
Leith	C.	—	—	—	—	21 -	21 -
		—	—	—	—	—	—
	M.	—	—	—	—	—	—
			1790.	1810.	1834.		
		1750.	*s. d.*	*s. d.*	*s. d.*		
Monimail ...	M.	5 -	7 6	16 6	13 6	—	—
	L.	2 6	5 3	11 -	8 -	—	—
			1791.		1841.		
			s. d.		*s. d.*		
Nairn	C.	—	8 6	—	12 -	17 -	17 -
	M.	—	8 6	—	15 -	—	—
			1792.		1836.		
			s. d.		*s. d.* *s. d.*		
Paisley	C.	—	—	—	—	21 -	21 -
		—	—	—	18 - to 24 -	—	—
	M.	—	—	—	—	—	—
		—	12 9	—	18 - to 24 -	—	—
	Pa.	—	—	—	—	—	—
		—	—	—	—	—	—
			1790-93.		1833.		
			s. d.		*s. d.*		
Peebles	C.	—	7 -	—	15 -	—	—
			1790-97.		1837-43.		
		'72-77.	*s. d.*		*s. d.*		
Perth	C.	—	—	—	—	19 -	19 -
		6 6	9 -	—	15 -	—	—
	M.	—	—	—	—	—	—
		7 -	10 -	—	14 -	—	—
			1790.		1835.		
			s. d.		*s. d.*		
Renfrew	C.	—	9 6	—	19 -	26 -	26 -
	M.	—	11 6	—	16 6	—	—

(*a.*) From 1808 to 1838, 15*s.* was paid in most years, but occasionally 1*s.* or 2*s.* more.

(*b.*) The wages stated in these lines are those paid at the Dundee Harbour Works, 1859-85. See report of the *Industrial Remuneration Conference.*

(*c.*) Painters, 1877: Dundee, 7½*d.*, Paisley, 8*d.* per hour. Number of hours per week a little uncertain.

Building Trades. Summer Weekly

Years		1864.	'65.	'66.	'67.	'68.	'69.	'70.	'71.	'72.	'73.	'74.	'75.	'76.	'77.	'78.	'79.	'80.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Aberdeen ...	C.	20 2	21 4	23 -	23 -	22 -	22 -	22 -	22 -	22 -	25 -	26 7	29 9	29 9	31 10	29 9	25 6	25 6
		—	—	—	—	—	—	—	—	—	—	—	—	—	30 4	—	—	—
	M.	—	—	—	—	—	—	—	—	27 7	—	—	—	29 9	32 11	—	—	26 7
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	32 11	—	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	18 -	—	—	—
Alloa	C.	20 -	22 -	23 9	21 4	21 4	21 4	22 7	23 9	23 4	25 6	27 7	29 9	29 9	31 10	27 7	25 6	25 6
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Arbroath ...	C.	20 -	21 -	23 -	22 -	22 -	22 -	22 -	22 -	23 -	24 -	26 -	28 8	27 7	29 9	29 9	25 6	25 6
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ayr	C.	24 -	24 -	23 9	23 9	24 11	24 11	24 11	26 1	25 10	26 7	28 8	30 10	32 11	32 11	31 10	27 7	25 6
	M.	—	—	—	—	—	26 1	—	—	27 7	—	—	—	36 1	—	—	—	25 6
Cupar	C.	—	—	—	—	—	—	—	—	—	23 4	23 6	25 6	25 6	27 7	27 7	25 6	25 6
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dumbarton	C.	28 -	29 -	29 -	28 6	26 1	26 1	27 7	27 7	29 9	29 9	34 -	34 -	34 -	36 1	34 -	29 9	27 7
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dumfries ...	C.	21 -	21 -	23 9	23 9	24 11	26 1	26 1	26 1	26 1	25 6	27 7	29 9	31 10	31 10	29 9	27 7	27 7
	M.	—	—	—	—	—	28 6	—	—	27 7	—	—	—	36 1	—	—	—	29 9
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dunbar	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dundee(*b*) ...	C.	23 -	25 -	25 6	25 6	25 6	26 -	25 6	25 6	27 7	30 10	30 10	34 -	34 -	34 -	31 10	27 7	25 6
		—	21 8	—	22 7	—	20 2	—	20 8	—	26 6	—	30 6	—	28 8	—	27 7	—
	M.	—	—	—	—	—	25 6	—	—	27 7	—	—	—	32 2	—	—	—	26 7
		—	28 6	—	30 3	—	25 6	—	25 6	—	29 9	—	38 3	—	38 3	—	29 3	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	33 9(*c*)	—	—	—
	L.	—	16 -	—	16 4	—	16 4	—	17 6	—	22 2	—	23 4	—	23 4	—	21 -	—
Dunfermline	C.	—	—	20 -	20 -	20 -	20 -	20 -	22 6	22 3	27 7	29 9	32 11	32 11	32 11	29 9	25 6	25 6
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Elgin	C.	20 -	20 -	21 4	21 4	21 4	21 4	20 2	21 4	22 7	22 7	24 11	28 6	30 10	27 7	27 7	23 4	23 4
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forfar	C.	17 -	18 -	20 -	20 -	20 -	20 -	22 -	20 -	23 4	25 6	26 -	29 9	29 9	29 9	27 7	25 6	25 6
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Galashiels ...	C.	—	—	—	—	26 1	26 1	26 1	26 1	25 6	27 7	27 7	29 9	33 3	31 10	31 10	29 9	25 6
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Haddington	C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Inverness ...	C.	20 -	20 -	23 9	23 9	23 9	23 9	26 1	23 9	23 9	26 1	28 6	27 7	27 7	29 9	29 9	25 6	23 4
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kirkcud-bright ...	C.	—	—	—	—	—	20 -	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Leith	C.	21 3	22 4	24 5	24 5	24 5	25 6	25 6	25 6	27 7	29 9	31 10	34 -	36 1	36 1	31 10	27 7	27 7
		—	—	—	—	—	—	25 6	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Monimail ...	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nairn	C.	18 -	19 -	19 -	19 -	20 -	20 -	20 -	20 -	2 -	22 6	22 6	26 6	25 6	25 6	25 6	23 4	23 4
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Wages. SCOTLAND AND IRELAND—*Contd.*

'81.	'82.	'83.	'84.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95	'96.	'97.	'98.	'99.	1900.
s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	27 7	27 7	28 8	31 10	31 10	31 10	34 -	34 -	34 -	36 1	34 -
—	—	—	—	25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	28 8	28 8	31 10	31 10	—	—	—	—
—	—	—	26 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	29 9	29 9	29 9	31 10	34 -	34 -	34 -	36 1	34 -
—	—	—	—	—	—	—	—	—	—	—	—	28 8	—	—	—	—	—	—	—
—	—	—	—	19 1	19 1	19 1	19 1	18 1	18 1	18 1	18 1	18 1	18 1	18 1	18 1	—	—	—	—
25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	27 7	29 9	29 9	29 9	29 9	29 9	31 10	34 -	34 -	34 -	34 -
—	—	—	—	—	—	—	—	—	33 9	38 3	36 1	36 1	—	—	—	—	—	—	38 3
25 6	25 6	27 7	27 7	27 7	27 7	27 7	27 7	28 8	28 8	28 8	29 9	29 9	29 9	29 9	31 10	31 10	31 10	34 -	34 -
—	—	—	—	—	—	—	—	—	27 7	29 9	31 10	31 10	34 -	—	—	—	—	—	36 1
27 7	27 7	28 8	28 8	28 8	28 8	28 8	28 8	29 9	29 9	31 10	31 10	31 10	31 10	31 10	34 -	36 1	36 1	—	38 3
—	—	—	27 7	—	—	—	—	—	—	—	34 -	34 -	—	—	—	—	—	—	38 3
25 6	25 6	25 6	25 6	25 6	25 6	25 6	23 4	24 5	24 5	—	—	26 6	27 7	29 9	29 9	29 9	29 9	29 9	29 9
—	—	—	—	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	—	—	—	—	—
—	—	—	—	—	—	—	—	—	27 -	31 6	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -	34 -
29 9	29 9	31 10	31 10	29 9	29 9	29 9	29 9	31 10	34 -	34 -	34 -	34 -	34 -	34 -	38 3	38 3	38 3	38 3	38 3
—	—	—	—	—	—	—	—	—	31 10	34 -	36 1	36 1	36 1	38 3	38 3	38 3	40 4	40 4	40 4
27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	29 9	29 9	31 10	31 10	31 10	31 10	31 10
—	—	—	29 9	—	—	—	29 9	—	28 8	28 8	29 9	29 9	34 -	—	—	—	—	—	36 1
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36 1
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34 -
—	—	—	—	—	—	—	—	—	31 6	36 1	34 -	36 1	—	—	—	—	—	—	38 3
25 6	27 7	29 9	29 9	29 9	29 9	29 9	29 9	31 10	31 10	31 10	31 10	31 10	31 10	31 10	31 10	31 10	31 10	38 3	38 3
29 9	—	31 9	—	31 -(*b*)	29 9	29 9	29 9	31 10	31 10	31 10	31 10	31 10	31 10	31 10	31 10	—	—	—	—
—	—	—	30 10	—	—	—	29 9	—	33 -	34 -	32 11	35 1	35 1	37 2	38 3	40 4	40 4	40 4	40 4
27 7	—	31 10	(*b*)	30 10	30 10	30 10	30 10	30 10	30 10	32 11	34 -	36 1	36 1	36 1	36 1	—	—	—	—
32 1	—	30 4	—	27 7(*b*)	27 7	27 7	27 7	27 7	29 9	29 9	29 9	31 10	31 10	34 -	34 -	36 1	36 1	36 1	36 1
21 -	—	21 -	—	21 -(*b*)	19 1	17 -	19 1	21 3	21 3	21 3	21 3	21 3	21 3	23 4	23 4	23 4	23 4	23 4	23 4
25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	24 5	26 6	27 7	29 9	29 9	29 9	29 9	29 9	31 10	34 -	36 1	34 -
—	—	—	—	—	—	—	—	—	30 10	30 10	34 -	34 -	—	—	—	—	—	—	37 2
23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	23 4	25 6	25 6	25 6	27 7	27 7	27 7	27 7	29 9	29 9	29 9
—	—	—	—	—	—	—	—	—	29 3	33 9	33 9	30 10	30 10	30 10	30 10	31 10	34 -	34 -	34 -
25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6	27 7	27 7	27 7	27 7	27 7	28 8	28 8	29 9	29 9	29 9	29 9	29 9
—	—	—	—	—	—	—	—	—	29 9	29 9	29 9	31 10	—	—	—	—	—	—	34 -
25 6	25 6	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	29 9	29 9	29 9	29 9	29 9	31 10	31 10	34 -
—	—	—	—	—	27 7	—	—	—	—	27 7	—	—	—	—	—	—	—	—	—
—	—	—	—	—	27 7	—	—	—	—	27 7	—	31 10	34 -	34 -	34 -	34 -	34 -	34 -	34 -
—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 9	34 -	36 1	36 1	36 1	36 1
23 4	23 4	—	25 6	25 6	25 6	25 6	25 6	25 6	27 7	27 7	29 9	29 9	29 9	29 9	31 10	31 10	31 10	31 10	31 10
—	—	—	—	23 4	23 4	23 4	23 4	23 4	23 4	27 7	27 7	27 7	27 7	27 7	27 7	—	—	—	—
—	—	—	—	—	—	—	—	—	30 10	30 10	30 10	32 11	—	—	—	—	—	—	35 1
—	—	—	—	25 6	25 6	25 6	25 6	25 6	25 6	29 9	29 9	29 9	29 9	29 9	29 9	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27 7	27 7	27 7	27 7	27 7	27 7	29 9	29 9	29 9	31 10	31 10	32 11	32 11	34 -	34 -	36 1	38 3	38 3	40 4	40 4
—	—	—	—	—	27 7	—	—	—	—	31 10	—	—	—	—	—	—	—	—	—
—	—	—	—	—	29 9	—	—	—	34 -	34 -	36 1	36 1	36 1	38 3	38 3	40 4	40 4	40 4	40 4
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21 3	21 3	21 3	21 3	21 3	21 3	21 3	21 3	21 3	23 4	23 4	23 4	27 7	27 7	27 7	27 7	29 9	29 9	29 9	29 9
—	—	—	—	—	—	—	—	—	25 6	27 7	28 8	27 7	—	—	31 10	34 -	34 -	34 -	34 -

Building Trades. Summer Weekly

Years	....	1864.	'65.	'66.	'67.	'68.	'69.	'70.	'71.	'72.	'73.	'74.	'75.	'76.	'77.	'78.	'79.	'80.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Paisley	C.	23 –	24 –	28 6	28 6	28 6	28 6	28 6	28 6	27 7	31 10	31 10	34 –	34 –	36 1	34 –	29 9	29 9
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	34 –(*c*)	—	—	—
Peebles ...	C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Perth	C.	21 4	22 –	24 –	24 –	24 –	24 –	23 4	23 4	25 6	27 7	29 9	31 10	31 10	31 10	29 9	23 4	23 4
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Renfrew	C.	28 –	28 –	26 8	26 –	26 –	26 –	27 –	27 –	29 3	30 10	32 11	31 10	32 11	32 11	31 10	29 3	29 3
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Years	....	1779.	'90.	1800	'11.	'26-27.	'55.	'56.	'57.	'58.	'59	'60.	'61.	'65.	'71.	'72.
IRELAND.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Armagh	C.	12 6	—	—	—	—	—	—	—	—	—	—	—	24 –	—	—
Belfast	C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	24 – to	27 –	—	30 –	—
	M.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	15 – to 18 –	—	—	—	—	—	—	—	—	—	30 –	—
	B.	—	—	—	—	—	20 –	20 –	24 –	—	—	24 – to	27 –	—	30 –	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	30 –	—
	Pa.	—	—	—	—	—	20 –	22 6	22 6	—	—	24 –	24 –	—	30 –	30 –
	Ps.	—	—	—	—	—	—	—	—	—	—	—	—	—	30 –	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	15 –	—
Cork	C.	9 –	—	—	—	24 6	24 –	24 –	24 –	24 –	24 –	24 –	24 –	—	—	—
	M.	9 –	—	—	—	—	24 –	24 –	24 –	24 –	24 –	24 –	24 –	—	—	—
	B.	—	—	—	—	—	24 –	24 –	24 –	—	—	—	—	—	—	—
	Pa.	—	—	—	—	—	24 –	24 –	24 –	24 –	24 –	24 –	24 –	—	—	—
	Ps.	—	—	—	—	24 6	—	24 –	24 –	24 –	24 –	24 –	24 –	—	—	—
	L.	—	—	—	—	7 –	—	—	—	—	—	—	—	—	—	—
Kilkenny	C. M. S.	—	10 –	12 6	—	—	—	—	—	—	—	—	—	—	—	—
Limerick......	C.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lisburn	C.	—	—	—	—	—	—	—	—	—	—	—	—	22 –	—	—

Years	....	1776-79.	'94.	1800.	'01.	'02.	'03.	'04.	'24.	'25.	'26.	'33.	'38.	'43.	'45.	'47.	'54.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d.
Dublin	C.	12 6	16 6	17 6	18 6	19 6	24 –	24 –	24 –	—	—	—	27 –	26 –	—	—	—
	M.	11 –	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	24 –	—	25 –	—	—
	Pa.	—	—	—	—	—	—	—	—	—	—	27 6	30 –	—	27 6	22 –	24 –
	Ps.	—	—	—	—	—	—	—	—	24 –	26 –	—	—	—	—	—	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	9 –	—	—

Note.—For Dublin wages in Irish currency before 1826 have

Years	....	1801.	1821-22.	1823.	1824.	1825.	1826-27.	1828.	1829.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Londonderry	C.	Inferior 14 6	20 –	19 –	19 –	19 –	18 –	17 –	17 –
	M.	Best 21 –	20 –	19 –	19 –	19 –	18 –	17 –	17 –
	Pa.	—	18 –	18 –	18 –	16 –	16 –	16 –	16 –
	L.	—	10 –	10 –	9 –	9 –	9 –	9 –	8 –

Wages. SCOTLAND AND IRELAND—*Contd.*

'81.	'82.	'83.	'84.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	31 10	31 10	34 –	34 –	34 –	34 –	36 1	38 3	38 3	38 3	38 3 }
—	—	—	—	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	—	—	—	—
—	—	—	—	—	—	—	—	—	31 10	34 –	36 1	36 1	—	—	—	—	37 10	40 –	40 – }
—	—	—	—	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 9	—	—	—	—
—	—	—	—	—	—	—	—	—	—	37 4	37 4	37 4	—	—	34 –	36 1	36 1	36 1	— }
—	—	—	—	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	32 8	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 9	31 10	31 10	31 10	31 10
23 4	25 6	27 7	27 7	27 7	27 7	27 7	27 7	27 7	29 9	29 9	29 9	29 9	31 10	34 –	34 –	34 –	34 –	36 1	36 1 }
—	—	—	—	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	27 7	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	32 11	34 –	36 1	36 1	36 1	36 1	36 1	36 1 }
—	—	—	—	26 6	26 6	29 9	29 9	29 9	29 9	29 9	29 9	29 9	29 2	29 9	29 9	—	—	—	—
31 6	31 6	33 9	31 6	31 6	28 1	30 4	—	—	—	—	32 7	33 9	33 9	33 9	36 –	36 –	36 –	36 –	36 –
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

'74.	'77.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	28 –	28 –	28 –	27 –	27 –	27 –	27 –	27 –	27 –	27 –	27 7	27 7	27 7	27 7	27 –	26 8
—	—	—	28 –	28 –	31 6	31 6	33 9	33 9	34 10	34 10	34 10	34 10	34 10	38 3	38 3	38 3	38 3 }
31 6	—	—	31 6	31 6	31 6	31 6	29 3	33 9	33 9	34 10	34 10	34 10	34 10	—	—	—	—
—	—	—	—	—	—	—	—	34 –	—	—	—	—	—	—	—	—	38 3 }
31 6	—	—	30 4	30 4	30 4	31 6	31 6	36 –	36 –	36 –	36 –	36 –	36 –	—	—	—	—
31 6	—	—	33 9	33 9	33 9	33 9	36 –	36 –	36 –	36 –	36 –	36 –	38 3	38 3	38 3	38 3	38 3
31 6	—	—	32 8	—	31 –	34 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	38 3	—	—	—
31 6	—	—	31 6	31 6	31 6	31 6	33 9	33 9	33 9	33 9	33 9	33 9	33 9	36 –	36 –	36 –	36 –
30 –	—	—	30 –	30 –	30 –	31 6	33 9	33 9	33 9	36 –	36 –	36 –	38 3	38 3	38 3	38 3	38 3
18 –	—	—	15 –	15 –	15 –	15 6	15 6	15 6	16 –	18 –	16 –	19 6	18 –	19 –	19 –	19 –	19 –
—	—	—	33 –	33 –	33 –	33 –	33 –	33 –	33 –	33 –	33 –	33 –	33 –	34 6	34 6	34 6	34 6
—	—	—	—	—	—	—	—	—	—	—	—	—	33 –	34 6	34 6	34 6	34 6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34 6
—	30 –	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34 –
—	—	—	—	—	—	—	—	—	—	—	—	—	33 –	34 6	—	—	33 –
—	—	—	—	—	—	—	—	—	—	—	—	—	15 –	16 –	16 –	16 –	16 –
—	—	—	—	—	—	C.	26 –	26 –	26 –	26 –	26 –	26 –	30 –	30 –	30 –	30 –	29 8
—	—	—	—	—	—	—	—	—	—	—	—	30 –	32 –	32 –	32 –	32 –	32 –
—	—	30 –	30 –	30 –	30 –	30 –	30 –	29 3	30 –	30 –	—	—	—	—	—	—	34 10

'57.	'58.	'59.	'60.	'61.	'63.	'64.	'70.	'75-77.	'86-87.	'88-90.	'91.	'92.	'93.	'94.	'95.	'96.	'97-99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
26 –	28 –	30 –	30 –	30 –	30 –	—	—	—	34 –	34 –	34 –	34 –	34 –	34 –	34 –	36 –	36 –	37 1
26 –	28 –	30 –	30 –	30 –	30 –	—	—	—	—	—	—	—	—	—	—	—	—	38 3
27 –	28 –	30 –	30 –	30 –	30 –	—	—	—	—	—	—	—	—	—	38 –	38 3	38 3	38 3
26 –	26 –	26 –	26 –	26 –	26 –	27 6	30 –	32 6	—	—	32 8	—	32 8	32 8	32 8	33 4	—	36 –
28 –	28 –	33 –	—	—	30 –	—	—	—	—	—	—	—	—	—	34 –	36 –	36 –	36 –
30 –	30 –	—	—	—	—	—	—	—	—	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –	36 –
27 –	28 –	30 –	30 –	30 –	30 –	—	—	—	—	—	—	—	—	—	—	—	—	36 –
9 – to 14 –		—	—	—	10 –	—	—	—	—	—	—	—	17 6	19 –	22 6	—	—	20 3

been converted into English at the rate 26*s.* Irish = 24*s.* English.

1830.	1831-34.	1835-36.	1886-90.	1891.	1892-96.	1897.	1898.	1899.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
17 –	16 –	16 –	26 –	28 3	28 3	30 7	—	33 –	33 –
17 –	16 –	16 –	—	—	—	—	—	—	33 –
15 –	15 –	—	—	—	—	—	33 3	—	35 4
8 –	8 –	—	—	—	—	—	—	—	15 –

Building Trades. Summer

Years	....	1792.	'94.	1810.	'11.	'12.	'13-14.	'15.	'16.	'17.	'18.	'19.	'24.	'26.	'31.	'33.	'38.	'45-46.	'47.
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Glasgow	C.	8 – to 12 –	—	18 –	18 –	18 –	18 –	18 –	18 –	18 –	18 –	14 –	—	—	14 –	—	—	—	—
		12 –* to 18 –*	—	20 –	18 –	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M.	10 – to 12 –	11 –	22 –	13 –	(*g*)	—	—	—	—	—	—	—	—	—	—	—	—	—
		12 –* to 16 –*	—	19 –†	19 –	20 –	20 –	20 –	20 –	22 3	21 –	16 8	—	17 –	15 6	16 6	—	—	—
	B.	—	—	19 –	19 –	19 –	19 –	19 –	19 –	19 –	19 –	17 10	—	—	16 8	—	20 6	—	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	22 6	22 6	22 6	22 6	22 6	22 6	22 6	22 6	22 6	—	—	21 6	—	22 6	—	—
	Ps.	—	—	23 4	23 4	23 4	24 6	24 6	23 4	23 4	23 4	23 4	—	—	22 2	—	—	—	—
	Pa.	—	—	19 –	19 –	19 –	19 –	19 –	19 –	19 –	19 –	19 –	—	—	18 6	—	—	17 6	20 –
	S.	—	—	18 6	22 2	22 2	22 2	23 4	22 2	22 2	22 2	22 2	—	—	21 1	—	—	—	—
	L.	7 6 to 9 –	—	12 3	12 3	12 3	12 3	12 3	12 3	12 3	10 –	8 4	—	—	10 –	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Years	....	1868.	'69.	'70–1.	'72.	'73.	'74.	'75.	'76.	'77.	'78.	'79.	'80.	'81.	'82.	'83.
		s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Glasgow	C.	Per	hour.	– 6½	– 7	– 7½	– 8	– 8½	– 9	—	– 8	– 6½	—	– 7	—	– 7½
		28 6	28 6	27 7½	29 9	31 10½	34 –	36 1½	38 3	38 3	34 –	27 7½	27 7½	29 9	—	31 10½
		—	—	—	—	—	—	—	—	—	—	—	27 7½	—	—	31 10½
	M.	—	—	—	—	—	—	Per	hour.	– 10	—	– 6	—	—	– 6½	– 7½
		28 8	27 7½	27 7½	29 9	31 10	34 –	36 1	40 4½	42 6	27 7½	25 6	25 6	27 7½	27 7½	31 10½
	B.	—	—	—	—	—	—	—	—	—	—	—	29 9	—	—	34 –
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	29 9	—	—	31 6
	Ps.	—	—	—	—	—	—	—	—	—	—	—	31 10½	—	—	28 8
	Pa.	28 6	30 10*h*	—	—	—	—	—	36 –	36 –	29 3	—	31 6	—	—	32 8
	S.	—	—	—	—	—	—	—	—	—	—	—	29 9	—	—	29 9
	L.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	17 –	—	—	21 3

* Best.

† Calculated from *Returns of Wages* for the years 1810-19. Porter gives average annual wages in his *Progress of the Nation*, and his figures are quoted in *Wages in the United Kingdom* by the present author. The figures here given are the summer wages for a week of sixty hours.

‡ Dates of change of average from 7*d.* to 9*d.* between 1889 and 1895 doubtful.

The following figures are given by Mr. Symons (*Handloom Weavers' Commission*, vol. xlii of 1839, p. 529). He does not state the place exactly, but his district was "South of Forth and Clyde," while most of his wage statistics are from the neighbourhood of Glasgow:—

Years...	1810.	1810-20.	1820-25.	1825-30.	1830-35.	1838.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
C.	18 –	—	—	—	—	20 –
M.	17 –	—	—	—	18 –	19 –
B.	17 –	16 –	—	—	—	—
Pb.	22 6	—	25 –	25 –	25 –	25 –
Ps.	21 –	21 –	—	—	20 –	20 –
Pa.	17 –	17 –	—	—	—	16 6
S.	16 6	20 –	20 –	20 –	20 –	20 –
L.	11 –	11 –	—	—	—	12 –

Weekly Wages. GLASGOW.

'50.	'51.	'52.	'53.	'54.	'55.	'56.	'57.	'58.	'59.	'60.	'61.	'62.	'63.	'64.	'65.	'66.	'67.
s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
22 –	21 –*d*	22 –	23 –	24 –	24 –	24 –	26 –	26 –	—	Per	hour.	– 5	—	– 5½	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	23 9	23 9	26 1½	26 1½	28 6	28 6
—	—	—	—	—	(*e*)	25 –	25 –	25 –	25 –	25 –	25 –	—	23 9	—	—	—	—
21 –*d*	21 –	21 –	23 9	25 –	25 –	25 –	24 4½	22 6½	(*d*)	—	—	—			—		
					Per hour	5½*d.* 5¼*d.*	5*d.*, 5¼*d.* 5½*d.*	5*d.* 4¾*d.*	5*d.*	5*d.*, 5½*d.*							
—	—	—	—	—	—	24 –	24 –	23 6	23 9	25 –	26 3*f*	—	26 3*f*	—	28 6	27 7½	28 8
—	—	—	—	—	—	29 3	29 3	27 9	26 –	26 –	28 –	—	28 –	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—
—	—	—	—	—	—	24 6	24 6	24 6	23 –	23 –	23 –	—	24 –	—	—	—	—
—	—	—	—	—	—	25 –	25 –	25 –	25 –	25 –	25 –	—	25 –	—	—	—	—
—	—	22 6	—	22 6	22 6	22 6	23 9	22 6	22 6	22 6	—	23 9	25 –	25 –	—	26 1	27 3
—	—	—	—	—	—	24 –	24 –	24 –	24 –	24 –	24 –	—	24 –	—	—	—	—
—	12 –	12 –	12 –	14 –	16 –	16 –	16 –	15 9	—	—	—	—	—	—	—	—	—
—	—	—	—	—	(*e*)	17 –	17 –	17 –	17 –	17 –	17 –	—	17 –	—	—	—	—

1884.	'85.	'86.	'87.	'88.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
—	—	—	—	—	– 8	—	– 8½	—	—	—	—	– 9	– 9½	—	– 10	—
31 10½	31 10½	31 10½	31 10½	31 10½	34 –	34 –	36 1½	36 1½	36 1½	36 1½	36 1½	38 3	40 4½	40 4½	42 6	42 6
—	31 10½	31 10½	31 10½	31 10½	31 10½	34 –	34 –	36 1½	36 1½	36 1½	36 1½	36 1½	—	—	—	—
– 7	—	—	—	—	—	– 7½	– 8	– 8½	—	—	– 9	—	—	– 9½	—	—
29 9	29 9	29 9	29 9	29 9	29 9‡	31 10½	34 –	36 1½	37 2‡	37 2‡	38 3	38 3	38 3	40 4½	40 4½	40 4½
—	29 9	29 9	29 9	29 9	29 9	36 1½	36 1½	36 1½	38 3	38 3	38 3	38 3	40 4½	40 4½	42 6	42 6
—	—	—	—	29 9	29 9	31 10½	34 –	34 –	35 –	36 1½	36 1½	36 1½	38 3	38 3	40 4½	40 4½
—	31 6	29 9	29 9	29 9	29 9	32 6	29 9	34 –	34 –	34 –	36 1½	—	—	—	—	—
—	29 9	29 9	29 9	29 9	29 9	31 10½	34 –	34 –	34 –	36 1½	38 3	38 3	38 3	40 4½	40 4½	40 4½
—	32 8	32 8	32 8	32 8	32 8	35 –	34 –	34 –	34 –	34 –	34 –	34 –	36 1½	36 1½	38 3	38 3
—	29 9	29 9	29 9	29 9	29 9	31 10½	31 10½	34 –	34 –	34 –	36 1½	36 1½	38 3	38 3	38 3	38 3
—	19 7	19 1	20 2	—	—	21 3	21 3	25 6	23 4	23 4	23 4	25 6	25 6	25 6	25 6	23 4
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(*d.*) From Strang, in *Statistical Journal*, 1858.
(*e.*) From *Returns of Wages*, 1830-86.
(*f.*) The *Returns* give 4*s.* 4½*d.* per diem. Webb, in *Industrial Democracy*, gives 23*s.* 9*d.* Probably 5¼*d.* for fifty-seven hours (25*s.* 9*d.*) was paid.
(*g.*) From *Weavers' Petition*, 1811.
(*h.*) 6½*d.* per hour; number of hours uncertain.

Building Trades. Summer

Years		1780–1800.	1792.	1800.	'04.	'10.	'10–20.	'22.	'23.	'24.	'25.	'26.	'27.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Edinburgh ...	C.	7 - 8 - 9 -	9 6	11 6(*k*)	—	—	Between 15 - and 18 -	—	23 - to 25 -		—	14 - or 15 -	
		—	—	—	22 -	18 -	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—
	M.	—	(*k*)	18 -	Depression in 1815.			18 -	rise	28 -	fall to		14 -
		—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—
	B.	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—
	Ps.	—	—	(*k*) 1800-20, 16 - or 18 -				—	24 -	28 - or more	—	—	13 -
	Pa.	—	(*k*)	16 -	—	—	20 -	17 -	—	—	—	—	—
	S.	(*k*)	About 1800, 12 -		—	—	25 - to 30 -	'20. 15 6	—	—	18 - to 25 -	—	—
	L.	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—

Years		1867.	'68.	'69.	'70–1.	'72.	'73.	'74.	'75.	'76.	'77.	'78.	'79.	'80.	'81–2.	'83.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Edinburgh ...	C.	—	—	- 6¼	—	- 6½	- 7	- 7½	- 8	- 8½	—	- 7½	- 6½	—	—	—
		25 6	25 6	26 6¾	26 6¾	27 7½	29 9	31 10½	34 -	36 1½	36 1¼	31 10½	27 7½	27 7½	27 7½	27 7½
		—	—	—	—	—	—	—	—	—	—	Per hour		- 6½	—	—
	M.	Per hour		- 6½	—	—	—	—	—	- 9	—	—	—	- 6	—	—
		—	—	27 7½	—	27 7½	—	—	—	38 3	—	—	—	25 6	—	—
		—	—	—	—	—	—	—	—	—	—	Per hour		- 6½	—	- 6¾
	B.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	29 9	—	32 11½
	Pb.	—	—	—	—	—	—	—	—	—	—	—	—	28 8	—	27 7½
	Ps.	29 9	—	—	—	—	—	—	—	—	(*b*)	42 6	17 -	29 9	—	27 7½
	Pa.	—	—	—	—	—	—	—	—	—	—	—	—	29 9	—	29 9
	S.	—	—	—	—	—	—	—	—	—	—	—	—	29 9	—	29 9
	L.	—	—	—	—	—	—	—	—	—	—	—	—	21 3	—	20 3
		—	—	—	—	—	—	—	—	—	—	Per hour		- 5*	—	- 4¾

* Perhaps 4¾*d.*

From the Statistical Accounts of SCOTLAND.

Years		1746.	1760	1775.	1790.	1791.	1792.	1793.	1794.	1839.	1844.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Edinburghshire...	C.	5 -	—	—	6 3	9 -	10 -	9 -	8 6	12 - to 18 -	19 6
	M.	7 -	6 9	8 -	10 -	12 -	12 -	10 -	11 -	15 - to 18 -	19 6

Weekly Wages. EDINBURGH.

'30–1.	'32.	'33–4.	'35.	'37.	'38.	'40.	'44.	'45–7.	'48.	'50.	'51.	'52.	'53.	'55–8.	'60.	'61.	'62.	'63.	'64.	'65.	'66.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	—	—	—	—	—	—	—	—	—	—	18 –	(*k*)	—	—		Per	hour	– 5	– 5¼	– 6
—	—	—	—	—	—	16 –	—	—	—	19 –	—	—	—	22 –	21 6	22 –	22 –	22 –	21 3	22 2¾	25 6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 3
—	—	—	18 –	—	—	20 –	20 –	26 –	22 6	20 –	20 –	20 –	20 –*k*	—	– 5	– 5½	—	—	—	—	—
—	—	—	—	Per	hour	– 4	—	—	—	—	—	—	—	24 –	24 –	26 1½	—	—	—	—	—
—	—	—	—	—	—	20 –	20 –	—	—	22 –	—	—	—	—	—	—	—	—	—	—	26 3
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	19 –	—	—	—	20 –	—	—	—	20 –	21 –	22 –	—	—	—	—	—
—	15 6	—	—	—	—	18 –	—	—	—	20 –	—	(*k*)	22 6	—	22 –	26 1½	—	26 1½	—	—	—
—	18 –	18 –	—	—	—	16 –	—	—	—	20 –	—	18 –	18 –*k*	18 –	21 –	21 4½	—	—	—	—	—
1827-36, 16 – or 18 –				20 –	—	18 –	—	—	—	18 –	—	21 –	(*k*)	—	21 –	23 –	—	—	—	—	—
—	—	—	—	—	—	12 –	—	—	—	12 –	—	—	—	—	15 –	18 –	—	—	—	—	17 6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

'84.	'85.	'86.	'87.	'83.	'89.	'90.	'91.	'92.	'93.	'94.	'95.	'96.	'97.	'98.	'99.	1900.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	—	– 7	—	—	– 7½	—	– 7¾	—	– 8	—	– 8½	– 9	—	– 9½	—
27 7½	27 7½	27 7½	29 9	29 9	29 9	31 10½	31 10½	32 11¼	32 11¼	34 –	34 –	36 1½	38 3	38 3	40 4½	38 3
—	7*d*., 7½*d*.	—	– 6½	—	—	– 7	– 7½	– 7¾	—	– 8	– 8¼	—	—	—	—	—
– 6½	—	—	—	– 7	—	– 7½	– 8	– 8½	– 8¼	– 8½	– 9	– 9½	—	—	—	—
27 7½	—	—	—	29 9	—	31 10½	34 –	36 1½	35 1	36 1½	38 3	40 4½	40 4½	40 4½	40 4½	40 4½
—	6¾*d*., 7*d*.	– 7	7*d*., 7½*d*.	—	—	– 7	– 7½	– 8½	– 8¼	– 9	– 9	– 9	—	—	—	—
—	—	—	—	—	—	—	—	36 1½	35 1	38 3	38 3	40 4½	42 6	—	—	—
—	36 4	36 4	29 9	—	—	34 –	36 1½	38 3	40 4½	38 3	38 3	38 3	—	—	—	51 –
—	29 9	27 7½	27 7½	28 5	28 5	28 5	31 10½	31 10½	31 10½	31 10½	34 –	34 –	36 1½	36 1½	38 3	38 3
—	36 4	36 4	29 9	—	—	29 9	31 10½	34 –	34 –	34 –	36 1½	38 3	38 3	38 3	38 3	38 3
—	31 9½	29 9	29 9	—	—	29 9	29 9	29 9	29 9	31 10½	31 10½	31 10½	34 –	34 –	36 1	38 3
—	31 9½	31 9½	29 9	—	—	31 10½	31 10½	34 –	31 10½	34 –	34 –	34 –	—	—	—	—
—	21 3	21 3	19 1½	—	—	21 3	21 3	23 4	21 3	22 4	21 3	21 3	—	—	—	—
—	– 5	—	– 4½	—	—	– 5	—	– 5½	4¾*d*., 5¼*d*.	5*d*., 5½*d*.	– 5	—	—	—	—	—

(*k*.) From newspaper cuttings dated 1853.

V.—*Professor Sidgwick.*

WE regret to record the loss of another distinguished Fellow of the Royal Statistical Society, in the death, on the 28th August, 1900, of Professor Henry Sidgwick, M.A., late Knightsbridge Professor of Moral Philosophy in the University of Cambridge. Failing health had caused him to resign this official position—to which he had been appointed in the year 1883—in the month of May preceding his death. His connection with the Royal Statistical Society, dating as it did from the year 1871, was of long standing, and though he never served on the Council, or as an Officer of the Society, he marked his continuing interest in its work by the presentations which he from time to time made to the Library.

It has been remarked that one great characteristic of Professor Sidgwick's work was the fact that he made it his endeavour—to an extent surpassing that of any other economist of the day—to increase knowledge without causing a breach with old traditions.

Referring to this loss which statistical science has sustained, we may quote some introductory remarks made by Major Craigie on the occasion of the delivery of his Inaugural Address (reproduced earlier in the present issue of the *Journal*) to the Section of Economic Science and Statistics in the British Association at Bradford in September.

Major Craigie remarked that it was due to the memory of a much-esteemed past President of Section F, that he should ask the members present to join with him in a tribute of admiration for the life of Professor Sidgwick, and of deep regret at his too early death. Earnest in criticism, perspicuous and exact in definition, his power of acute and balanced definition was as remarkable as his personality was charming to his friends. His works would long be recognised by students of statistics and of economics as in a wonderful degree helpful and suggestive. At Aberdeen, in 1885, Professor Sidgwick occupied the chair of that section, and it was the speaker's privilege to serve under him as Vice-President on that occasion. The acquaintanceship which he thus formed with Professor Sidgwick from that date ripened into a very intimate friendship on many points, and he was sure he was expressing the opinion of all those who were engaged in the kind of work which that Section took in hand, if he placed on record the pleasure and the advantage they had derived from the valuable co-operation of Professor Sidgwick on many occasions, the appreciation of the wise advice they had received from him, and the admiration of all economic thinkers for the man they had lost. That loss was a very real one to all workers in that department.

VI.—*Sir John Bennet Lawes, Bart., F.R.S.*

THE death of Sir John Bennet Lawes, Bart., LL.D., D.Sc., F.R.S., at the ripe age of 86, on the 31st August last, deprives the Royal Statistical Society of a distinguished Fellow, whose connection with the Society dates from the year 1874. Sir John Lawes served on the Council in the year 1888, was a donor to the Library, and in 1880, in conjunction with his life-long fellow-worker, Sir Henry Gilbert, F.R.S., read a valuable paper before the Society on the "Home Produce, Import, Consumption, and Price of Wheat over the Harvest Years 1852-53 to 1879-80." This paper, as will be seen by a reference to the forty-third volume of the *Journal*, was discussed in conjunction with one previously read before the Society by Major Craigie, who, in his recent address to the British Association, deplored "the loss of this veteran in the service of agricultural science and statistics," and remarked "on the munificence with which Sir John established and provided for the endowment of what is probably the most complete establishment for agricultural experiment and investigation in the world." In the year 1872 Sir John announced his intention of placing in trust his laboratory and experimental fields, with an endowment of 100,000*l.*, in order that the work which he had so much advanced might be perpetuated. His labours in the field of agricultural economics were most remarkable. Dividing itself into two main heads, as concerning, on the one hand, farm crops, and, on the other, farm animals, Sir John Lawes's work covered practically the whole science and practice of agriculture—grain, roots, artificial manures, ensilage, and everything that in any way concerns the work of the farmer—all were studied and experimented upon. The scope of his labours and their extent may be perhaps best gauged by an examination of the valuable series of statistical works—to be consulted in the Society's library—which form a monument of the sixty-five years of labour and experiment which he expended on the model farm at his home at Rothamsted.

VII.—*Agricultural Returns of Great Britain*, 1900.

Preliminary statement for 1900, compiled from the returns collected on the 4th June, and comparison with previous years.

Crops and Live Stock.		1900.	1899.	1898.
		Acres.	Acres.	Acres.
Wheat		1,845,042	2,000,981	2,102,206
Barley		1,990,265	1,982,108	1,903,666
Oats		3,026,088	2,959,755	2,917,760
Potatoes		561,361	547,682	524,591
Clover and rotation grasses	For hay	2.201,781	2,214,883	2,381,551
	Not for hay	2,557,377	2,593,068	2,529,799
TOTAL		4,759,158	4,807,951	4,911,350
Permanent pasture	For hay	4,373,099	4,339,085	4,536,315
	Not for hay	12,355,936	12,291,662	12,023,077
TOTAL		16,729,035	16,630,747	16.559,392
Hops		51,308	51,843	49,735
		No.	No.	No.
Cows and heifers in milk or in calf		2,620,901	2,671,260	2,587,190
Other cattle—2 years and above		1,372,532	1,341,310	1,381,595
,, 1 year and under 2		1,460,808	1,388,511	1,345,844
,, Under 1 year		1,359,929	1,394,639	1,307,735
TOTAL OF CATTLE		6,805,170	6,795,720	6,622,364
Ewes kept for breeding		10,350,326	10,460,837	10,137.932
Other sheep—1 year and above		5,963,869	6,040,600	6,203,858
,, Under 1 year		10,278,031	10,737,317	10,401,404
TOTAL OF SHEEP		26,592,226	27,238,754	26,743,194
Sows kept for breeding		332,521	375,911	362,200
Other pigs		2,049,411	2,247,902	2,089,395
TOTAL OF PIGS		2,381,932	2,623,813	2,451,595

1900 *Compared with* 1899.

Crops and Live Stock.	Increase.		Decrease.	
	Acres.	Per Cent.	Acres.	Per Cent.
Wheat	—	—	155,939	7·8
Barley	8,157	0·4	—	—
Oats	66,333	2·2	—	—
Potatoes	13,679	2·5	—	—
Clover and rotation grasses — For hay	—	—	13,102	0·6
Clover and rotation grasses — Not for hay	—	—	35,691	1·4
TOTAL	—	—	48,793	1·0
Permanent pasture — For hay	34,014	0·8	—	—
Permanent pasture — Not for hay	64,274	0·5	—	—
TOTAL	98,288	0·6	—	—
Hops	—	—	535	1·0
	No.	Per cnt.	No.	Per cnt.
Cows and heifers in milk or in calf	—	—	50,359	1·9
Other cattle—2 years and above	31,222	2·3	—	—
,, 1 year and under 2	72,297	5·2	—	—
,, Under 1 year	—	—	43,710	3·1
TOTAL OF CATTLE	9,450	0·1	—	—
Ewes kept for breeding	—	—	110,511	1·1
Other sheep—1 year and above	—	—	76,731	1·3
,, Under 1 year	—	—	459,286	4·3
TOTAL OF SHEEP	—	—	646,528	2·4
Sows kept for breeding	—	—	43,390	11·5
Other pigs	—	—	198,491	8·8
TOTAL OF PIGS	—	—	241,881	9·2

VIII.—*Notes on Economical and Statistical Works.*

America's Working People. By Charles B. Spahr. 261 pp., 8vo. New York: Longmans, Green, and Co., 1900.

In reading this little book a sense of the reality of what is here described impresses itself on one. Mr. Spahr has set himself to examine certain social conditions of the working class in America, and in the result he finds himself in opposition to some prevailing opinions, opinions in which, we think we rightly conclude from what is written, he himself shared at one time. He dwells on the reductions in money wages which the evidence he collected in factory towns demonstrated, a reduction which sometimes takes the form of less regular work at wages nominally unchanged. The remarks on the early age at which men become unable to stand the strain of modern manufacturing processes are very impressive. The description of the condition of affairs among the workers under Mr. Carnegie is worth reading, for it shows the two sides of the despotism established among them: the industrial gain of capable management, the social loss in restricted freedom. Other chapters deal with various aspects of the negro problem, and another, again, with the Mormons. On these we shall not dwell. The whole book is wonderfully suggestive, and not least attractive through the constant recurrence to the question of what kind of man is produced under such-and-such conditions, when at the outset the inquiry was aimed at determining questions of hours of work, wages, and the like.

Le Coton. Par Henri Lecomte. 494 pp., 8vo. Paris: G. Carré et C. Naud, 1900.

To this monograph on the culture and history of the economic uses of cotton the *Académie des Sciences morales et politiques* has awarded the Prix Rossi. It is a careful and painstaking study, covering the botanical nature and physical and chemical properties of the cotton fibre on the one hand, and, on the other, including a collection of information on the various sources of supply and on the distribution of the crop among manufacturing peoples. A historical sketch of the growth of the cotton manufacture in France and in England is also included in the scope of the volume. The author expresses regret at difficulties in obtaining satisfactory information in regard to the industry in France. The relative progress of consumption of cotton in England and on the continent, and a number of other statistical features of the development of the industry, are illustrated diagrammatically. Some estimates as to relative cost of production in different localities are also included.

Reflections on the position of France lead to some remarks on colonial development, and others on trade. It is instructive to find the English held up to our neighbours by one of themselves as showing that adaptability, of the lack of which he accuses the French manufacturers and traders. How often have we been told that our own traders and manufacturers need this characteristic!

L'État Moderne et ses Fonctions. Par Paul Leroy-Beaulieu. Troisième edition. 487 pp., 8vo. 9 francs. Paris: Guillaumin et Cie., 1900.

A new and enlarged edition of a work like this does not call for any special comment from us on its scope and method or on its conclusions. It is sufficient that we call the attention of our readers to its appearance, and to the fact that the conclusions set forth in the earlier editions are maintained fully in the present one. The characteristic feature of the modern State is, our author tells us, omnipotence, an attribute realised in theory and becoming more and more completely realised in practice. From this fact no small amount of evil can take its rise. An interference with the citizen, constantly increasing, and none too intelligently controlled, ever manifesting itself in new phases of life, is one of these evils. A new chapter, with the title, *L'État moderne, le protectionisme et le chauvinisme*, develops the author's views on what he refers to as one of the saddest and most disquieting features of our time. References to current politics to illustrate this thesis we forbear to reproduce. Interested readers will seek them, expressed in the author's own language, in the pages of this useful volume.

Les Paysans et la Question Paysanne en France dans le dernier quart du xviii^e siècle. Par N. Karéiew. Translated from the Russian by Mlle. Woynarowska. 635 pp., 8vo. 12 francs. Paris: V. Giard et E. Brière, 1899.

This work forms a study of the rural phases of the problems presented in France in the years preceding the Revolution. The fifteen years preceding 1789 is the special period studied, together with the years from 1789 to 1793. The actual situation of the peasants, their relations to the *bourgeoisie*, to their lords, and to the crown, are discussed; an account of the reforms attempted and of those secured, with a discussion of the influence thereby exerted on the well-being of the rural population, follows. In some respects the picture which the author has drawn of the way in which new legislation and changing circumstances threw the land more and more into the hands of large proprietors, and of the consequent sufferings of the poor, and especially the references to the loss of common rights, carry one's mind away to certain chapters on the condition of the English peasantry at a time not very distant from that here studied, as depicted by Arnold Toynbee and others.

Various causes have combined to modify the situation since the Revolution, and the *question paysanne* thus had only a temporary existence. In our author's opinion it has been neglected by historians in a degree which its importance does not merit. His own interest in it is, of course, not unconnected with the interest attaching to cognate questions at a much later date in his own country, and hence we find that this careful examination of a historical problem relating to France is undertaken in Russia.

In an appendix a series of interesting extracts from documents in the national archives of France is given, and notes on some special points are also given in a series of supplements.

The Races of Europe. A Sociological Study. By William Z. Ripley, Ph.D. xxxii + 624 pp., with a supplement, 160 pp., 8vo. London: Kegan Paul, Trench, Trübner, and Co., 1900.

This somewhat ponderous volume is the development of a series of Lowell Institute lectures delivered in 1896. It brings together a vast quantity of material relating to the different questions of importance in anthropological investigations. It is enriched by a series of portrait types numbering 222 in all, of great value in illustrating the text, and in the collection of which the author takes a pardonable pride. Further, between eighty and ninety maps and diagrams, excellently designed, are interspersed in the text, showing the geographical distribution of various features by varying tints corresponding to the varying intensities of the feature in question in different localities. We do not attempt to select from among the vast mass of material any features of special interest to our readers. The task would demand more space than is at our disposal. Very particular mention must, however, be made of the supplement, in which is given a selected bibliography of the anthropology and ethnology of Europe, together with an index to the same, published by the public library of the city of Boston. This alone would place anthropologists under a great obligation to Dr. Ripley, and,.added to the valuable treatise, makes his book doubly necessary to students of this science.

Corporations and Public Welfare. Philadelphia: American Academy of Political and Social Science. (*Supplement to the Annals of the Academy.*) May, 1900. 208 pp., 8vo. $1·00.

The addresses delivered at the annual meeting of the American Academy of Political and Social Science in April last are published together in a volume bearing the above title. Of its four parts the first, dealing with the control of Public Service Corporations, discusses some questions which bear directly on the subject of municipal trading, and these are of value in view of the attention which is at present directed to that subject, with more than usual interest, in this country. Professor Rowe expresses roundly the opinion that the relations between municipalities and the corporations performing certain important public services must not be adjusted with a view to the greatest pecuniary gain to the municipality, but that this must be subordinated to quality and cost of service. The question of the municipality undertaking the performance of such services must, consequently, be decided on a basis which contrasts with what is often urged in favour of that course. The difficulties of public control over corporations are discussed in the light of the experience of American cities. The subject of the annual address, "The Influence of Corporations on Political Life," is dealt with in an able manner, but calls for no detailed reference. The third part of the volume bears the title, "Combination of Capital as a Factor in Industrial Progress." The addresses under this heading are less interesting, appear to penetrate less deeply into the important questions suggested by the title itself than the earlier addresses had inclined us to expect. The three addresses in Part IV, which is entitled "The Future of Protection," are also somewhat disappointing. They are more abundantly illustrated with figures than any of the others, but, though discussing some important questions of the future tariff-policy of the United States, hardly merit the general title given them, even though it be understood to apply to the United States alone.

Die unehelichen Geburten als Socialphänomen. Von Dr. Friedrich Lindner. 238 pp., 8vo. M. 4·80. Leipzig: A. Deichert, 1900.

The study of illegitimacy could hardly be illustrated more effectively than by the experience of Bavaria. Dr. Lindner's treatise is a statistical examination of the facts, in their historical and geographical relations, which the available information relating to illegitimacy in Bavaria can supply. The geographical distribution is made clear by two cartograms showing the varying intensity of the evil according to two measures—the one the proportion of the illegitimate births to total births, the other their proportion to the unmarried female population between 16 and 50 years of age. The two measures do not yield proportionate results, and some rather striking differences are shown in the comparison of the cartograms, though the main features are similar.

The most striking of the historical facts which are set forth is the effect of the legislation of 1868, which, removing the main hindrances to marriage which the law had previously imposed, resulted in an immediate and steadily continued reduction of illegitimacy. The comparative failure of earlier legislation in the same direction is discussed and satisfactorily explained. Among the matters subjected to examination by Dr. Lindner is the connection of religious profession with the extent of illegitimacy, but no clear results are secured. The association of high illegitimacy with large towns is also inquired into, but no relation between the closeness of agglomeration of population and the rate of illegitimacy was able to stand clearly out from the facts collected.

The difficulties of the problem set himself by Dr. Lindner are not small, but the use he has made of the material at his disposal is striking. His inquiry is on very thorough lines, and among his conclusions not the least useful are those in which he returns a verdict of "not proven," where current opinion is opposed to that verdict.

Report by Mr. Wilson Fox on the Wages and Earnings of Agricultural Labourers in the United Kingdom, with Statistical Tables and Charts. (Board of Trade, Labour Department.) Price 3*s.* 4*d.* x + 296 pp. (Cd–346.) London: Eyre and Spottiswoode.

The importance of this publication is very great, and we wish we could believe that it was intended to form the first of a series of monographs relating to the great industries. We find here an adequate account of the economic position, the nature and conditions of work, the wages and their recent changes of more than a million workers. Needless to say, we are not given an actual wage census on this scale; but the "information as to wages and earnings of agricultural labourers has been obtained, as far as possible, from all parts of every county in England and Wales, Scotland, and Ireland." (p. 4.)

The most significant part of this work is that which deals directly with wages and earnings. Careful estimates are given of weekly cash wages, and the additions due to extra payments and payments in kind. The method of tabulation of cash wages is novel, being as follows:—

County.	Range of Wages.		Predominant Rate.	
	Summer.	Winter.	Summer.	Winter.
	s. *s.*	*s.* *s.*	*s.*	*s.*
Lancashire	16 to 21	16 to 21	19	19
Worcester	10 ,, 18	10 ,, 17	14	14
Dorset	10 ,, 14	10 ,, 13	11	11

We have selected for illustration the English counties with the highest, median, and lowest wages respectively, an arrangement which corresponds closely with the geographical distribution. The "predominant" rate is defined on p. 25 as the "median" wage, "that is to say, a rate so chosen that the numbers of labourers whose rates of wages are above and below that rate are as nearly as possible equal;" and all statisticians will be glad to see this most useful average at last boldly and explicitly used in an official publication. It is much to be regretted, however, that the "median" has been confused with the "mode," when it is called the "predominant" rate; it might occur that the median wage was not predominant, and in such cases it is doubtful whether the median or mode should be preferred. In earlier reports (*e.g.*, that of the Labour Commission), when we are told that at Holbeach wages ranged from 13*s.* 6*d.* to 15*s.*, mean 14*s.* 3*d.*, it is clear that we are dealing with an arithmetic average; but when, in still earlier accounts, we read that the current wage was, say, 10*s.*, we may expect that this sum represents the predominant rate, the mode, that is the rate most generally paid to the unskilled adult labourer. For purposes of comparison of such districts as counties these distinctions are important. In the West Riding of Yorkshire wages varied from 15*s.* at Thorne, to 18*s.* to 20*s.* at Wortley, in June, 1898; as far as can be gathered from the details given, the arithmetic average of the rates, taking the numbers in each district into account, was 16*s.* 8*d.*, the median 16*s.* 6*d.*, the mode only 15*s.* The predominant rate given on p. 25 is 16*s.* Statements of wages in the West Riding for earlier dates may be comparable with any of these, but cannot be comparable with all.

In the present report we have separate statements relating to each of the rural districts, and the student will naturally turn to these for information; but the casual reader will confine himself to the summary by counties. Now the county is the necessary unit to take for summarisation, but conditions vary so much from part to part of the same county (in Worcester rates range from 11*s.* at Shipston to 18*s.* at King's Norton), that a county average means very little. The excellent map prefixed to the report would have been far more valuable if it had been separately shaded for each of the rural districts. To illustrate this difficulty, let us turn to the late Mr. W. C. Little's report (Labour Commission. C.–6894, xxiv). There reports on thirty-eight English districts are found, and one is sorely tempted to assume that they are typical of the counties in which they lie; but on analysis we find that Pershore, the district taken in Worcester in the 1891 inquiry, is very near the bottom of the scale in Mr. Fox's report, the wage being only 13*s*., while the arithmetic average, median and mode for Worcester are 14*s*. Mr. Little points out this difficulty on p. 61 of his report. If we take larger areas than the county, this difficulty partly disappears, and we may group the counties into six or eight larger divisions, and compare averages with better security; yet even when we pick out from the present report the thirty-eight unions, with an average of 13*s*. 5*d*., given in the Labour Commission for 1892, we find that the corresponding average in 1898 was only 13*s*. 7*d*., instead of 14*s*. 2*d*., the general average for the country.

It is unfortunate that Mr. Fox has not given a critical comparison of these two reports separated by an interval of only six years, for there are other difficulties needing explanation. The following table shows the relation of wages to earnings in selected counties and divisions:—

	Mr. Little's Report, 1893.						Mr. Fox's Report, 1900.					
	Estimated Weekly				Excess of Earnings.		Estimated Weekly				Excess of Earnings.	
	Wages.		Earnings.				Wages.		Earnings.			
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Yorkshire, East Riding	15	6	17	1	1	7	15	4	18	6	3	2
Shropshire	14	–	17	6	3	6	14	1	17	5	3	4
Hampshire	11	6	15	–	3	6	12	8	16	7	3	11
Average for England....	13	5	15	9	2	4	14	3	16	10	2	7

The minor differences between these estimates need careful analysis. In the comparison, based on the "Changes of Wages" between 1895 and 1898 previously published, an increase of 4*d*. weekly is found between those two dates. We have, and shall have, no means of filling up accurately the short gap between 1892 and 1895; but there appears, from the figures mentioned below, to have been a slight fall in those three years of about 4*d*. a week; there is then a discrepancy of about 1*s*. to be accounted for between the two estimates of average wages, of which half is due to the selection by the Labour Commission of counties where wages were on the whole below the average. We may note, in passing, that where wages are low, there additional earnings are generally high.

The report is independent of previous investigations in its historical summary of changes of rates of payment; and, though there is no serious difficulty in bringing this new material into line with the comparative figures already extant, there is a risk that too much confidence may be placed on the averages resulting from the series of figures obtained from thirty-three farms. These are very valuable consecutive records of wages since 1850. Selecting years from the table in the report (p. 49), we have—

Percentage Fluctuations of Wages, as compared with the Standard Year, 1893.

		England and Wales. (33 Farms.)	Midland Counties. (9 Farms.)	Eastern Counties. (6 Farms.)	Southern and South Western Counties. (13 Farms.)
Minimum	1851....	69·4	73·4	73·9	66·9
Maximum....	'74....	102·3	102·8	122·3	95·4
	'75 ..	102·0	103·1	118·6	95·4
	'77....	102·8	103·1	119·3	98·2
Minimum	'87....	95·4	95·2	98·5	95·0
	'88....	95·5	94·8	96·1	95·7
Maximum....	'99....	104·1	102·3	110·1	104·2

Thus the district reports agree in showing a great rise till about 1876, and a slight fall till 1887, and recovery by 1899, but differ greatly in the exact magnitude of the rise and extent of the corresponding fall. A slight readjustment of the weights given to the various districts would have considerable effect on the average; and these returns must be taken only as data for the solution of the problem, which is indeed all they profess to be, and not as establishing with any great accuracy the relative height of wages in the different years.

The figures for Scotland and Ireland are nearly as complete as for England in very recent years, but very little material is given for historical study. Might not the Labour Department conduct a supplementary inquiry into the wages settled at hiring fairs during the long period for which there are newspaper records?

We have devoted so much space to the pure statistics, that we must leave readers to find for themselves the very interesting accounts of the various systems of farming, the difference between north and south in numberless details of organisation of work, the growing scarcity of labour, and the general progressive improvement in the position of the labourer.

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UNITED STATES—

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May—The Government of a typical Prussian City—Halle A/S: *E. J. James.* Tendencies in the taxation of Transportation Companies in the United States: *R. C. McCrea.* Proportional Representation and the Debates upon the Electoral Question in Belgium: *E. Mahaim.* Representation in the Legislatures of the North Central States: *G. H. Haynes.*

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June—De l'aptitude de la population française à l'émigration: *A. Dumont.* La régularité dans les choses humaines ou les types statistiques et leurs variations: *P. E. Fahlbeck.* De la répartition des cultes dans certains États de l'Allemagne: *P. Meuriot (concluded).*

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August—Statistique de l'enseignement primaire: *E. Levasseur.* Un exemple de dépopulation rurale: le département de la Somme: *P. Meuriot.*

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June—Les principes de la Révolution des 1789 et le Socialisme: *E. Martineau (concluded).* L'Exposition d'Économie sociale: *G. de Nouvion.* La statistique des affaires et ses enseignements: *C. M. Limousin.* La Guerre au point de vue économique: *M. Rouxel.*

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105—L'Assurance contre le chomage involontaire dans la mutualité: *E. Rostand.* La politique de relèvement des métiers en Autriche: *V. Brants.*

106—L'Assistance publique et la bienfaisance privée: *L. Rivière.* Les pensions de retraites aujourd'hui et autrefois: *R. de Kéralain.* Ce que Le Play pensait de la Chine: *L. Etcheverry.*

107 *et* 108—Compte rendu de la réunion annuelle.

109 *et* 110—De l'intervention des pouvoirs publics dans le mouvement d'amélioration des habitations à bon marché: *E. Rostand.* Le Recensement général des industries et des métiers en Belgique.—Les méthodes, les résultats. I: *A. Julin.* Les sociétés de secours mutuels et la question des assurances sociales en Angleterre au xviii^{e} siècle. I: *L. Bassereau.*

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June—La répartition des primes entre les armateurs et les constructeurs de navires dans la législation française: *L. Brocard.* La statistique et son rôle pour la société contemporaine: *Dr. J. Goldstein.*

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Zeitschrift für Socialwissenschaft, 1900—

June—Die Bevölkerung Europas im Mittelalter: *J. Beloch.* Die genossenschaftlichen Siedlungen in Süd-Australien: *F. Oppenheimer.* Technische Kontrolle in nordamerikanischen Grossbetrieben: *K. Mareiner.*

July—August—Nationalökonomie, Sociologie, Anthropologie: *F. Oppenheimer.* Ein deutschniederländischer Zollverein: *Freiherr v. W. Sartorius.* Die Landarbeiterfrage in den östlichen Provinzen Preussens: *O. Gerlach.* Socialhygienische Gesichtspunkte in der Tuberkulosefrage: *Dr. A. Gottstein.*

Vierteljahrshefte zur Statistik des Deutschen Reichs. Heft 2, 1900—Die Erzeugnisse der Bergwerke, Salinen und Hütten, 1899.

GERMANY—*Contd.*

Vierteljahrshefte zur Statistik des Deutschen Reichs—Contd. Verkehr auf den deutschen Wasserstrassen in den Jahren 1872 bis 1898. Banknoten- und Wechsel- Kurse an der Berliner Börse, 1895-99. Zur Statistik der Preise. Zur Statistik der Krankenversicherung (1898 und 1893/98).

AUSTRIA—

Statistische Monatschrift, May, 1900—Statistik des Civil-Staatsdienstes mit besonderer Berücksichtigung der Gehalte auf Grund des Staatsvoranschlages pro 1900: *R. v. Pflügl.* Oesterreichs Sparcassen im Jahre 1898. I.: *E. Ehrenberger.*

ITALY—

Giornale degli Economisti, 1900—

July—Sul principio economico: *B. Croce.* La legge e la questione dell' emigrazione in Italia: *A. Bosco.* I progetti di legge sui manicomi e la finanza locale: *E. Fornasari di Verce.* Le comunità di villaggio in India: *N. Tamassia e J. Tivaroni.*

August—Il momento economico dell' Arte: *U. Mazzola.* Sul fenomeno economico, lettera a Benedetto Croce: *V. Pareto.* La riunione internazionale degli economisti: *F. Giretti.* Politica ed Economia: *T. Canovai.* Nota su alcuni risultamenti delle elezioni politiche: *A. Bertolini.*

Rivista Italiana di Sociologia. May—June, 1900—Che cos' è la sociologia? *R. Schiattarella.* L'Automatismo nelle funzioni politiche e sociali: *G. Sergi.* La popolazione della Repubblica Argentina: *P. Sitta.* Sopravvivenze primitive nei riti delle civiltà superiori: *G. Pinza.*

SWITZERLAND—

Journal de Statistique Suisse, 1900—

Lief. 3—Buchführung für schweizerische Viehversicherungsgenossenschaften: *F. Anderegg.* Beiträge zür Ätiologie der Prostatahypertrophien: *Dr. A. Joss.*

Lief. 4—Les caisses d'épargne de la Suisse en 1897: *G. Fatio.* L'épargne du monde: *G. Fatio.* Statistischer Beitrag zur Epidemiologie des Keuchhustens: *Anna Meyer.* Die alkoholfreien Wirtschaften der Schweiz: *Dr. H. O. Schlub.* Die freiwillige Viehversicherung im Kanton Appenzell A/Rh.

Lief. 5—Die Blinden in der Schweiz: *Dr. L. Paly.*

IX.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th September*, 1900, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c. (British);* (f) *Periodicals, &c. (British).*

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From Austria-Hungary, United States, and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico. Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Dresden, Hanover, Bucharest, Madrid, Montevideo, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

Egypt—Bulletins et Mémoires de l'Institut Égyptien.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue Géographique internationale. Revue de Statistique. Société de Statistique de Paris, Journal.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia.

Spain—Sociedad Geografica de Madrid, Boletin y Revista.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals and Bulletin. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c. Sound Currency Committee, Leaflets.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings.

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Trade Journal. Building Societies and Land Companies Gazette. Citizen. Colliery Guardian. Commercial World. Cotton. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Post. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Policy-Holder. Post

United Kingdom—*Contd.*
Magazine. Public Health. Sanitary Record. Shipping World. Statist. Travel. Tuberculosis. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts' Journal. Surveyors' Institution, Professional Notes and Transactions.

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries.**	
Argentine Republic—	
Buenos Ayres. (City.) Annuaire Statistique de la Ville. ix^e^ année, 1899. Map, 8vo	The Municipal Statistical Bureau
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Arbeitsstatistischen Amtes. Mittheilungen des, Heft 1 (Die Lohnarbeiter der k.k. Kriegsmarine). 8vo. 1900	The Austrian Labour Department
Handel. Berichte über die Handelsbewegung sowie Bewertung der im Jahre 1899 ein- und ausgeführten Waren des österr.-ungar. Zollgebiets. 8vo. 1900	The Statistical Department, Ministry of Commerce
Handels. Statistik des auswärtigen, des österr.-ungarn. Zollgebiets. Jahr 1899. 4 vols., 8vo.	
Statistisches Jahrbuch der autonomen Landesverwaltung in den im Reichsrathe vertretenen Königreichen und Ländern. 1 Jahrgang. La 8vo. 1900.	The Central Statistical Commission
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Belgium—	
Annuaire Statistique de la Belgique. 30^e^ année, 1899. Diagrams, 8vo	The Bureau of General Statistics
Commerce avec les Pays Étrangers. Tableau Général du, pendant 1899. Diagrams, la. fol.	
Mines. Annales des. Tome v. Livr. 3. Année 1900	The Belgian Labour Department
Travail. Les Industries à domicile en Belgique. Vol. 2. . . . Plates, &c., 8vo. 1900	
Hasselt. Verslag over Bestuur en Toestand der Gemeentezaken, 1898-99. 8vo.	The Burgomaster
Bulgaria—	
Commerce de la Principauté avec les Pays étrangers. Statistique du. Mouvement de la Navigation et prix moyens annuels . . . pendant 1899. Diagrams, 4to.	The Statistical Bureau
Écoles dans la Principauté. Statistique des, pendant 1895-96. Partie 4, fol.	
China—	
Customs Gazette. Jan.—Mar., 1900	Sir Robert Hart, Bart., G.C.M.G.

Donations—Contd.

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries**—*Contd.*	
China—*Contd.*	
Journal of China Branch of Royal Asiatic Society. Vol. xxxi. 1896-97. 8vo.	The Society
Denmark—	
Communications statistiques. 4e Série. Tome 6. (Prix des céréales en 1899. Salaires, &c., en 1897. Récoltes en 1899. Consommation de familles d'ouvriers danois.) 8vo. 1900 Marine marchande et Navigation en 1899. 4to.	The State Statistical Bureau
Egypt—	
Commerce extérieur de l'Égypte pendant 1899 Douanes, Administration des. Rapport du Directeur Général sur l'exercice 1899	The Director-General of Customs
Comité de Conservation des Monuments de l'Art Arabe. Exercices 1897 et 1898. Procès-Verbaux des Séances, &c. Fasc. 14 et 15. Plates, 8vo. 1898-1900	The Committee
Postes Égyptiennes, Administration des. Rapport sur l'Exercice 1899. 8vo.	The Post Office
Report on Finances, Administration, and Condition of Egypt and the Soudan in 1899. [Cd-95.] 1900	Purchased
Egyptian Statistical Tableau for 1899. Compiled and published annually by R. J. Moss and Co., Alexandria. 33rd issue. Sheet	Messrs. R. J. Moss and Co.
France—	
Agriculture, Bulletin du Ministère de l'. Année 1900. (Current numbers)	The Ministry of Agriculture
Chemins de fer Français, Statistique des, au 31 Déc., 1898. Documents divers. 1e Partie, France: Intérêt général. 2e Partie, France: Intérêt local et Tramways. 2 vols., 4to.	The Ministry of Public Works
Finances, Ministère des. Bulletin de Statistique et de Législation comparée. (Current monthly numbers)	The Ministry of Finance
Tableau décennal du Commerce de la France. 1887-96. 2 vols. Fol.	The British Board of Trade
Dictionnaire du Commerce, de l'Industrie, et de la Banque. Livr. 13. 8vo. 1900	Purchased
Germany—	
Auswärtiger Handel des deutschen Zollgebiets im Jahre 1899. Theil 1, Verkehr mit den einzelnen Ländern in 1899, 1898, und 1897. Hefte 1—23, 4to. Krankenversicherung. Statistik der, im Jahre 1897. Einleitung. 4to. 1900 Statistisches Jahrbuch für das Deutsche Reich. 21er Jahrgang, 1900. Diagrams. 8vo. Vierteljahrshefte zur Statistik des Deutschen Reichs. Jahrgang 1900. Heft 2, 4to.	The Imperial Statistical Bureau

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(a) **Foreign Countries**—*Contd.*	
Germany—*Contd.*	
Weltausstellung zu Paris, 1900. Deutsches Reich. Verzeichniss der auf dem Gebiete der Hygiene und der sonst vom K. Gesundheitsamte vorbereiteten Vorführungen. xxiii + 143 pp. 8vo. 1900	The Health Bureau
Prussia. Zeitschrift des K. Preuss. Stat. Bureaus. 1899, Heft 4. 1900, Hefte 1 und 2	The Royal Prussian Statistical Bureau
Saxony—	
Kalender und Statistisches Jahrbuch für 1901. 8vo.	The Royal Statistical Bureau of Saxony
Zeitschrift des K. Sächsischen Statistischen Bureaus. Hefte 1 und 2, 1900. 4to.	
Berlin. Die Berliner Volkszählung von 1895. Theil 1. 4to. 1900	The Municipal Statistical Bureau
Hamburg—	
Hamburgs Handel und Schiffahrt, 1899. La. 4to.	The Statistical Bureau
Statistik des Hamburgischen Staates. Heft 19, Hälfte 2, Volkszählung 2 Dec., 1895. 4to	
Italy—	
Annali di Statistica. Statistica Industriale. Fasc. 2*a*, 3*a*, 13*a*. 1900	The Director-General of Statistics
Annali di Statistica. Atti della Commissione per la Statistica giudiziaria civile e penale. Sessione del Luglio e del Dicembre, 1899. 2 vols., 8vo	
Movimento Commerciale del Regno nell' anno 1899. Parts 1 e 3. Diagrams, fol.	
Scioperi. Statistica degli, avvenuti nell' Industria e nell' Agricoltura durante 1898. 8vo.	
Statistica delle Elezioni generali politiche 3 e 10 Giugno, 1900. 8vo.	
Statistica dei Ricoverati in Ospedali pubblici e privati e in altri Istituti di Assistenza nell' anno 1898. 8vo.	
Japan—	
Résumé statistique de l'Empire du Japon. 14^e^ année. [1898.] Maps, &c., 8vo. 1900	The Statistical Bureau
Mexico—	
Boletin demografico de la Republica Mexicana, 1898. Año III, No. 3. (Movimiento de Poblacion en 1897.) La. 8vo. 1899	The Director-General of Statistics
Censo general de la Republica, 1895. Resumen del Censo. La. 8vo., 1900	
Norway—	
Arbeiderkommissionens Socialstatistik. Bind IV^2. (Tabeller.) (Invalides en 1894, cause et durée de l'Invalidité . . .) 8vo., 1900	The Central Statistical Bureau
Chemins de fer publics, en 1898-99. (329)	
Finances des communes pendant 1895. (330)	
Hospices d'Aliénés. Statistique des, pour 1898. (331)	
Instruction publique. Statistique pour 1896. (334)	
Maisons centrales pénitentiaires. Statistique des, pour 1897-98. (328)	
Navigation. Statistique de la, pendant 1898. (333)	

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Norway—*Contd.*	
Prisons departementales. Statistique des, pour 1898. (332)	The Central Statistical Bureau
Norway. Official publication for the Paris Exhibition, 1900. 626 + xxxiv pp. Plates, la. 8vo. 1900	Ministry of Public Instruction
Christiania. Beretning fra Kristiania Sundhedskommission for 1899. Diagrams, 8vo. 1900	The Municipal Health Department
Portugal—	
Caminhos de ferro. Elementos estatisticos dos, 1877-98. Fol.	The Director-General of Statistics
Estatistica criminal e disciplinar do Exercito, anno 1898. 8vo.	
Lista dos navios de guerra e mercantes de Marinha portugueza, 1 Jan., 1900. 8vo	
Relatorio, propostas de lei e documentos . . . Sessao 1900. (Finance, Trade, Taxation, Movement of Population.) Diagrams, fol.	
Lisbon. Consumo em Lisboa. Estatistica dos generos sujeitos á panta dos direitos de consumo. Annos 1890-98. 38 pp., 8vo. 1899	
Porto. Boletim mensal de Estatistica sanitaria. Jan.—Feb., 1900. 8vo.	The Municipal Statistical Bureau
Roumania—	
Bulletin statistique. Année 5, 1900—1901. No. 1. Résultats provisoires du dénombrement de 1899. 8vo.	The Statistical Bureau
Bucharest. Anuarul Statistic al Orașului Bucuresci, pe Anul 1897. Diagrams, 8vo. 1899	The Municipal Statistical Bureau
Russia—	
Bulletin russe de statistique financière et de législation. (Current numbers.) La. 8vo.	The Editor, Bulletin Russe
Fonds d'État russes et autres valeurs mobilières créées en Russie. Budgets. Chemins de fer. Conversions. Circulation fiduciaire. 2^{nde} edition. (Bulletin russe de Stat.) 168 pp., fol. 1900	
Prices of rye and oats in European Russia. Diagram-maps showing. (Current monthly numbers)	The Department of Trade
Prix moyens des marchandises en gros sur les principaux marchés russes et étrangers pour 1890-99. 4to.	The Ministry of Finance
Finland. Annuaire Statistique pour la Finlande. 21^e année. 1900. 8vo.	The Central Statistical Bureau
Servia—	
Annuaire Statistique du Royaume de Serbie. 3^e tome, 1896-97. 8vo. 1900	The Statistical Bureau
Statistique du Commerce extérieur pour 1899. 4to. 1900	The Customs Department
Spain—	
Tablas de valores para la importacion y exportacion de mercancias del año de 1899. Edicion oficial. 8vo.	The Director-General of Customs

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Sweden—	
Bidrag till Sveriges Officiela Statistik—	
E. Sjöfart, 1878. (Shipping)	The Central Statistical Bureau
D. Fabriker och Handtverk, 1898. (Industries)	
N. Jordbruk och Boskapsskötsel, 1898. (Agriculture)	
O. Landtmäteriet, 1899. (Surveys).	
P. Undervisningsväsendet, 1897-99. (Education.) 3 parts	
La Suède, son peuple et son industrie, exposé historique et statistique . . . . plates, diagrams. 8vo. Stockholm, 1900	
Stockholm. Berättelse till Kongl. Medicinalstyrelsen om Allmänna Helsotillståndet i Stockholm . . . . af Stockholms Helsovårdsnämnd. Året 1899. 8vo.	
Switzerland—	
Assurances. Rapport sur les Entreprises privées en matière d'Assurances en 1898. Diagrams. 4to.	The Federal Assurance Bureau
Commerce de la Suisse avec l'Etranger en 1899. Statistique du. Diagrams. La. fol.	The Federal Department of Customs
Recrues. Examen pédagogique des, en automne, 1899. Maps. 4to.	The Federal Statistical Bureau
Geneva. Bibliothèque Publique. Compte-rendu pour 1899. 8vo.	The Library
Schweizerischen Handels- und Industrie Verein. Bericht über Handel und Industrie der Schweiz im Jahr 1899. 4to.	The Association
United States—	
Agriculture. Department of. Crop Reporter. (Current numbers), also Section of Foreign Markets. Bulletin No. 19. Our Foreign Trade in Agricultural products, 1890-99. Circular No. 22. Agricultural imports and exports, 1895-99. 8vo.	The Department of Agriculture
Agriculture. Yearbook of the U.S. Department of Agriculture, 1899. Plates. 8vo.	
Census. History and growth of the United States Census, prepared for the Senate Committee on the Census by Carroll D. Wright, assisted by W. C. Hunt. 967 pp. 8vo. 1900	The U.S. Department of Labour
Debt. Monthly Statements of the Public, and of Cash in Treasury. (Current numbers.) Sheets	The Secretary of the Treasury
Gold, Silver, and Notes, &c., in Circulation. Monthly Statements. (Current numbers.) Sheets	
Foreign Commerce and Navigation of the United States for the year ending 30th June, 1899. 2 vols., maps and diagrams, 4to.	The Bureau of Statistics, Treasury Department
Labor. 14th Annual Report of the Commissioner of Labor, 1899. (Water, gas, and electric-light plants under private and municipal ownership.) 983 pp., 8vo. 1900	The U.S. Dept. of Labour
Maryland. Bureau of Industrial Statistics. 8th Annual Report for 1899. 8vo. 1900	The Bureau

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United States—*Contd.*	
New York State. Library Bulletin. Legislation, No. 12. May, 1900. Trend of Legislation in the United States. 8vo. 1900	The State University
Wisconsin. University of. Bulletin No. 35. Parts 8 and 9. March, 1900. 8vo.	The University
New York. Public Library. Bulletin. (Current numbers)	The Library
Colonies—	
Porto Rico. Census of Porto Rico, taken under direction of War Department. Bulletin No. 1. Total population by departments, municipal districts, cities, and wards. No. 2. Population by age, sex, race, nativity, &c. 8vo. 1900	The War Department
Mineral Industry, The. 1899. Vol. viii, 8vo. 1900	Purchased
American Academy of Political and Social Science. Supplements to Annals. (1) Corporations and Public Welfare. (2) Selected official documents of the South African Republic and Great Britain . . . 2 vols., 8vo. 1900	The Academy
American Economic Association. Economic Studies. Vol. iv, No. 6. Effects of recent changes in Monetary Standards upon the distribution of Wealth. Dec., 1899. 12mo.	The Association
John Crerar Library [Chicago]. Fifth Annual Report for 1899. 8vo.	The Librarian
International—	
Bulletin International des Douanes. (Current numbers.) 8vo.	The Board of Trade
Institut international de Statistique. Bulletin. Tome xi. 2^e^ et dernière livraison	The Director-General of Statistics, Rome

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(b) **India and Colonial Possessions.**	
India, British—	
Agricultural Statistics of British India for 1894-95 to 1898-99. 15 issue. Fol. Financial and Commercial Statistics of British India. [1898-99 and before.] 7th issue. Fol. Judicial and Administrative Statistics for British India for 1898-99 and the four preceding years. 4th issue. Fol. Prices and Wages in India. 17th issue. Fol. 1900 Trade of India. Review of, in 1899-1900. Fol.	The Statistical Bureau, Government of India
Moral and Material Progress and Condition of India during 1898-99. Statement exhibiting, 35th No. (207.) 1900 Statistical Abstract relating to British India from 1889-90 to 1898-99. 34th No. [Cd. 367.] 1900	The India Office
East India (Famine). Papers regarding the Famine and relief operations during 1899-1900. 2 vols. [Cd-205.] [Cd-206.] 1900	Purchased

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(b) **India and Colonial Possessions**—*Contd.*	
India, British—*Contd.*	
Income and Expenditure from 1888-89 to 1898-99. (203.) 1900	Purchased
Indian Expenditure Commission. First Report (in 2 vols). [C-8258] and [C-8259.] 1896. Vol. 3. Minutes of Evidence, &c. [Cd-130.] 1900. Vol. 4. Final Report. [Cd-131.] 1900	
Indian Plague Commission, 1898-99. Minutes of Evidence. Vols. 1—3. Maps, diagrams, &c. 1900	
Bengal. Report on the Administration of Bengal, 1898-99. Maps, fol. 1900	The Lieutenant-Governor of Bengal
East India Railway. 108th Report of the Directors, 27th June, 1900; also Statement giving certain details of working of Railway for twenty years ending 31st Dec., 1899. 2 parts. Fol. 1900	The East India Railway
Bombay Branch of Royal Asiatic Society. Journal. Vol. xx. No. 55. 1899. Plates, 8vo.	The Society
British South Africa Company—	
Information as to Mining in Rhodesia supplied to the Company. 412 pp. Maps, 4to. 1900	The Company
Canada, Dominion of—	
Session 1899. *Sessional Papers.* Vols. 8, Public Works, Railways and Canals. 9, Marine and Fisheries. 10, Shipping, Postmaster. 11, Interior. 12, Indian Affairs, N.W. Police	Sir J. G. Bourinot, K.C.M.G., LL.D.
Session 1900. *Sessional Papers—*	
Canadian Archives. Report for 1899	
Criminal Statistics for 1898-99	
Department of Interior. Annual Report for 1899. Plates and maps	
Experimental Farms. Reports for 1899. Plates	
Geographical Survey Department. Report for 1899. Map	
Mail Service in Yukon Territory. Report on certain expenditures for. 1900	
Public printing and stationery. Report of Department for 1898-99	
Purchase of Emergency Rations for Troops. Report of Committee *re.* 1900	
Dividends remaining unpaid, and unclaimed balances in Chartered Banks. 1899	Mr. N. S. Garland
Chartered Banks. Monthly Reports on. (Current numbers)	
Ontario. Bureau of Industries. Report for 1898. 8vo. 1900	The Bureau
Cape of Good Hope—	
Births and Deaths. Report of the Registrar for 1899. Fol.	The Agent-General for the Cape
Marriages, Births, Deaths, and Causes thereof. Tabular statements for 1897-99. Fol.	
Statistical Register of the Colony for 1899. Diagram. Fol. 2 copies	

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(b) **India and Colonial Possessions**—*Contd.*	
Mauritius—	
Blue Book for the Colony for 1899. Fol.	The Mauritius Government
Mauritius Civil List, 1900. 8vo	
New South Wales—	
New South Wales. Statistics, history, and resources. 166 pp. Map, 8vo. 1900	The Agent-General of N.S. Wales
Another copy, presented by	Messrs. G. Street and Co.
Statistical Register for 1899. Parts 4, Commerce. 5, Population and Vital Statistics. 6, Manufactories and Works. 7. Education, Science, and Art. 8, Agriculture. 9, Land Settlement (Sec. 2, Rural Holdings)	The Government Statistician
Wealth and Progress of New South Wales, 1898-99. Map. 8vo. 12th issue	
New Zealand—	
Friendly Societies. 23rd Annual Report by the Registrar for 1899. Fol.	The Registrar
Old Age Pensions. Report for the year ended 31st Mar., 1900. 3 pp., fol.	
Labour Department. 9th Annual Report for 1899—1900. Fol.	The Department
South Australia—	
Annual Report of Registrar-General of Births, Deaths, and Marriages, 1899	The Registrar-General
School of Mines and Industries and Technological Museum. Annual Reports, with statements of receipts and expenditure, instructors' reports, &c., for 1898-99, with geological map to accompany report for 1899. 2 vols., plates, 8vo.	Mr. Herbert D. Gouge
Straits Settlements—	
The Perak Government Gazette. (Current weekly numbers)	The Government Secretary
Tasmania—	
Royal Society of Tasmania. Papers and Proceedings for 1898-99. Plates, &c., 8vo. 1900	The Society
Victoria—	
Australasian Statistics for 1898	The Assistant Government Statist
Statistical Register for 1899. Appendix to Part 4, Municipal Finances. Part 9, Social Condition	
Statistical Register for 1899. Part 1, Bluebook. Part 2, Interchange	
Western Australia—	
Annual Report of Collector of Customs, &c., for 1899. Fol.	The Collector of Customs
Diagram showing output of Gold, 1886-99. Sheet	The Agent-General for W. Australia
Gold mining statistics for 1898. Map, fol.	
Supplements to Government Gazette, containing Monthly Mining Statistics for February—May. 1900. Fol.	

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(b) **India and Colonial Possessions**—*Contd.*	
Western Australia—*Contd.*	
Statistical Register for 1898. Part 9, Religion, hospitals, charitable institutions, &c.	The Registrar-General for W. Australia
Statistical Register for 1899. Parts 2, Public Finance; 4, Interchange	
Year-Book for 1898-99. 11th year of issue. Vol. i. Maps, &c., 8vo. 1900	
Australasia—	
Wragge's Australasian Almanac and Weather Guide for Land and Sea. 1900. Maps, &c., 8vo. Brisbane	Messrs. Gordon and Gotch
(c) **United Kingdom and its several Divisions.**	
United Kingdom—	
Bankruptcy. 17th Annual Report by Board of Trade, under Section 131 of the Bankruptcy Act, 1883. (316.) 1900	The Inspector-General in Bankruptcy
Board of Trade Journal. (Current numbers)	The Board of Trade
Customs. 44th Report of Commissioners for the year ended 31st March, 1900. 8vo. [Cd–319.] 1900	The Commissioners
Factories and Workshops. Annual Report of Chief Inspector for 1899. Plates. [Cd–223.] 1900	The Chief Inspector of Factories
Foreign Trade and Commerce. Accounts relating to Trade and Commerce of certain Foreign Countries and British Possessions. (Current numbers.) 1900	The Board of Trade
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On the DISTRIBUTION *of* POPULATION *in* ENGLAND *and* WALES, *and its* PROGRESS *in the* PERIOD *of* NINETY YEARS *from* 1801 *to* 1891.

By THOMAS A. WELTON, F.C.A.

[Read before the Royal Statistical Society, 20th November, 1900. The Right Hon. LORD AVEBURY, President, in the Chair.]

I THINK it has never occurred to any statistician to depict in a comprehensive manner the distribution of our population in 1801, or its progress since that date.

The condition of things in 1801 was, that whilst a commencement had been made in the development of our manufactures and mines, things had not proceeded very far, and there was no town outside London which contained so many as 100,000 inhabitants. The number of those which had at the least 4,000 inhabitants I make to have been 112, and there were smaller towns, ranging from a population of 1,000 upwards, to the number of 457. Some other places, with less than 1,000 inhabitants, had essentially the character of towns, but I find it would lead to difficulty and confusion if any attempt were made to notice these. Even of the smaller towns with 1,000 inhabitants and upwards, as many as 63 were so mixed up with rural populations, that I have found it better to merge them in the mass, except where I have expressly stated otherwise. This I could the better do, as their collective population was not great enough to affect materially the apparent average density of population in rural districts.

Before I proceed, I may as well state that I define a town as being an aggregation of dwellings within a narrow compass, whether constituted as a municipality or not, and whether under several authorities or one; but above all, a market for the supply of surrounding districts.

The metropolis might in 1801 be liberally estimated to extend over 44,000 acres, and to contain about 922,000 inhabitants. Other places of importance are set down as follows:—

	Acres.	Population.		Acres.	Population.
Manchester..........	5,100	91,432	Leeds	2,600	39,865
Liverpool	4,600	79,910	Newcastle-on-Tyne	2,600	39,000
Birmingham	4,000	68,728	Norwich	2,400	35,699
Bristol....................	3,600	56,837	Bath	2,200	32,824
Plymouth	2,750	42,140	Sheffield	2,350	32,785
Portsmouth	2,800	41,366	Nottingham	2,150	31,347

As respects the districts not included in towns, part of them cannot strictly be called rural. Certain populous areas where manufactures, mining, and other industrial pursuits occupied a large number of people, were even in 1801 inhabited more densely than were purely agricultural districts: their total extent I consider to have been about 346,796 acres.

In certain parts of the country, and especially in the northern divisions and in Wales, extensive districts were very sparsely peopled, the areas of such districts including mountains, moors, and wastes to a great extent unavailable save for the pasturage of a few sheep.

Finally, there were the broad and cultivated plains, on which agriculture was by far the most important pursuit, and the distribution of population in these was not very unequal, tending to a higher level in the neighbourhood of the metropolis, and falling to a minimum in the neighbourhood of the sparsely peopled districts in the north.

To show all these facts by counties would be too tedious; and would also fail to convey so clear an idea of the state of things as that which may be attained by means of larger subdivisions. I have therefore ventured to cut up the country into thirteen divisions, unequal in magnitude and dissimilar in character, the statistics of which are appended.

It has been borne in mind, in arranging these divisions, that every great centre of trade, like the metropolis, radiates its influence over an extensive area, limited generally by the means of access to it; for instance, any place which has equally convenient access to two centres of trade may be said to be on the boundary line of their respective spheres of influence. The metropolitan district has been laid out in a nearly circular form, irrespective of county boundaries, but in other cases it has been found practicable to group "registration counties" so as not to seriously violate this principle. In Appendix **A** I have explained the limits of the thirteen areas.

The census of 1801 gave less information as to the actual populations of small towns and subdivisions of ancient parishes than that which was furnished in 1891, so that in order to avoid (as far as may be) the use of estimates, the towns are represented in the tables which accompany this paper by small districts (parishes or townships) or groups of such districts, such as in 1891 nearly corresponded with the actual towns, but usually far exceeded them in extent. Small towns rarely cover more than 400 to 600 acres, usually much less, and any acreage beyond may in general be treated as part of the open country, save only in cases where a town is situate in the midst of populous mining or manufacturing districts. From the gross population and area of the districts representing towns, it is thus practicable to throw off by estimation a large extent of land, with an approximately true population, and thus to represent the more correctly the ingredients of which the entire population is composed.

Coming now to the actual facts for the whole country in 1801, we have the following table:—

Summary No. 1.	Acres.*	Population, 1801.	Density per Acre.
London	44,000	922,000	20·95
112 towns from 4,000 to 92,000 inhabitants	112,294	1,400,762	12·47
170 ,, 2,000 ,, 3,999 ,,	80,743	472,513	5·85
224 ,, 1,000 ,, 1,999 ,,	99,777	301,742	3·02
Populous areas	346,796	227,593	0·66
Areas surrounding towns	2,611,603	846,674	0·32
Rural districts sparsely peopled †	8,768,581	651,359	0·07
Other rural districts ‡	25,254,091	4,069,893	0·16
England and Wales	37,317,885	8,892,536	—

* The acreage is taken from the census of 1891.

† Including 8 towns of above 1,000 inhabitants; total population, 10,050.

‡ ,, 55 ,, ,, ,, 73,700.

The acreage attributed to the towns is doubtless too large, but if it were diminished, the area attributed to the surrounding districts would not be sufficiently increased to lower appreciably their average density 0·32 per acre. The total 2,611,603 acres includes a belt of districts around the circumference of London proper, which even in 1891 could not reasonably be held to have been so far absorbed or assimilated as to owe their rate of progress mainly to the general growth, and which belt, therefore, has been separately shown in the appended tables. Even beyond this belt, many places show large increases of population representing new residents working in London.

On reviewing the above summary it will be seen:—

(*a.*) That urban populations, including most of the small towns, amounted to about 35 per cent. of total population.

(*b.*) That the rural districts, exclusive of areas surrounding towns, mostly of a rural character, included 91 per cent. of the total area.

(*c.*) That the areas classed as "populous" were less than 1 per cent. of the whole.

(*d.*) That whilst density of population in the sparsely peopled districts averaged 0·074 per acre (or 47 per square mile), in the better peopled rural districts the density averaged 0·161 per acre (or 103 per square mile).

The area and density attributed to towns are not to be taken as strictly correct. Smaller areas and higher densities would doubtless have been arrived at, could we have laid down scientific boundaries. In London the highest local density of central districts was found to be nearly 300 per acre; many of such districts, however, attained no more than 150 to 200 persons per acre. Cities of less magnitude may in general have had less closely packed central populations, but the outer parts in all cases would fall to a much lower level, sinking perhaps at the lowest to about one or two persons per acre.

The following table shows certain facts for the thirteen divisions taken separately, viz.:—

(*a.*) The *number*, per million acres, of towns of 1,000 inhabitants and upwards, and the proportion *per cent.* of total population living in such towns.

(*b.*) The proportion per cent. of acreage occupied by "populous "districts," also the proportion per cent. of total population inhabiting same.

(*c.*) The proportion per cent. of acreage occupied by rural districts, distinguishing those sparsely peopled[1] in 1891.

(*d.*) The density of population in each class of rural districts.

(*e.*) The proportion per cent. of population living in rural districts, including those which are sparsely peopled.

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[1] This means having less than 80 inhabitants per square mile.

1801.	*a.* Towns.*		*b.* Populous.		*c.* Rural Acreage		*d.* Rural Density.		*e.* Rural Population.*
	Number	Percentage.	Acreage.	Population.	Sparse.	Other.	Sparse.	Other.	
Cumberland, &c.	10·1	33	—	—	71	26	0·06	0·12	66
Durham, &c.	8·7	37	2	7	63	30	0·06	0·13	49
North and East Ridings	9·3	31	—	—	65	31	0·08	0·13	66
West Riding	26·0	32	6½	13	28	52½	0·08	0·19	37
Lancashire and Cheshire	28·7	45	3½	6	13	67	0·08	0·21	34
Lincoln, Notts, &c.	12·3	23	1	2	7	86	0·08	0·14	68
Stafford, Warwick, &c.	28·3	43	⅓	1	2	83	0·16†	0·17	44
Wales, Salop, &c.	9·3	17	¼	1	44	53	0·07	0·14	81
Gloucester, Devon, &c.	18·0	29	1	3	17	75	0·08	0·18	62
Wilts, Hants, &c.	15·6	27	¼	1	8	85	0·10	0·16	68
Metropolitan circle	17·0	57	—	—	—	80	—	0·18	30
Northampton, &c.	16·2	19	—	—	7	87	0·10	0·17	76
Norfolk, &c.	11·8	23	—	—	—	96	—	0·16	75
England and Wales	15·3	36	1	2½	23½	67½	0·07	0·16	53

* Including the sixty-three towns of 1,000 inhabitants and upwards merged in rural areas.

† A small area, the population of which has decreased since.

The ordinary average number of towns of 1,000 inhabitants and upwards seems to have been from 16 to 18 per million acres; this number was strikingly exceeded in Lancashire, Stafford, and West Riding divisions. In the three northern divisions and in Wales, towns were much fewer, ranging from 9 to 10 per million acres. In the Norfolk and Lincoln divisions towns were also rather few. The absolute town population, in thousands, per million acres, varied thus:—

Metropolitan circle	268
Lancashire and Cheshire	200
Stafford, Warwick, &c.	140
West Riding	106
Gloucester, Devon, &c.	68
Durham, &c.	59
Wilts, Hants, &c.	57
Norfolk, &c.	48
North and East Ridings	44
Lincoln, Notts, &c.	43
Northampton, &c.	40
Cumberland, &c.	35
Wales, Salop, &c.	22

The proportion of town population to total inhabitants varies, of course, according to its absolute amount compared with the density of population in surrounding districts; it is shown in the table to be lowest in the Welsh, Northampton, and Norfolk districts.

Rural Districts.—In the four divisions of Cumberland, Durham, North and East York, and Wales, a large part of the total area was sparsely peopled, and even in the remainder the density was low. In the rest of the country it will be seen that the normal average density of rural population was from 0·16 to 0·18 per acre, say 100 to 110 per square mile. Higher densities are shown for the rural parts of Lancashire and West York, but these naturally resulted from the diffusion of an industrial element in those counties, even beyond the limit of the areas which I have distinguished as being populous.

Those populous areas already in 1801 were not insignificant, comprehending in—

West York................	6½ per cent. of area,	13 of population.
Lancashire................	3½ ,,	6 ,,
Durham	2 ,,	7 ,,

The sparsely-peopled districts have been separated from the others on the principle that none of them[2] should exceed a density of 80 per square mile. They seem to have ranged from an average density of about 40 to an average of fully 60 per square mile, and in four instances included a very large part of the entire area of the division.

The divisions which in 1801 had not a preponderance of rural inhabitants were (excluding the metropolitan division):—

	Per Cent.
Lancashire and Cheshire..	34
West Riding..	37
Stafford, Warwick, &c.	44
Durham, &c.........	49

and those in which the preponderance of the agricultural element was most marked were:—

	Per Cent.
Wales, Salop, &c..	81
Northampton, &c.	76
Norfolk, &c.	75

Contrasting with the facts thus shown for 1801, the corresponding figures for 1891, the altered position of our country is most noticeable.

In setting forth the figures for 1891, I have naturally allotted increased areas to the larger towns, those below a certain size being given as before a space of 400 to 500 acres each, unless the known area is smaller. A certain number of new towns are set forth with areas proportioned to their importance, but, as will be hereafter noticed, others exist which have mostly been allowed to remain unnoticed amongst the districts described as "populous," which districts cover a much wider area than in 1801. Towns, the populations of which fell short of 4,000 in 1891, are generally disregarded, save those which were separately shown in the tables for 1801. The 63 towns which then contained 1,000 inhabitants or more, but were merged in rural districts, are left in the same position.

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[2] The districts which I have made the units of my work are in general registration subdistricts, or the residue of these after excluding towns and populous districts. In a few cases single parishes are treated as units.

The summary results are:—

Summary No. 2.	Acres.	Population, 1891.	Density.
London	130,573	5,216,273	39·95
112 towns having 4,000 inhabts. and upwards in 1801	390,315	8,905,741	22·82
170 ,, 2,000 ,, ,, ,,	144,463	1,944,099	13·46
224 ,, 1,000 ,, ,, ,,	144,944	1,534,737	10·59
70 new towns	79,832	1,088,437	13·63
Populous areas as in 1801	346,796	660,179	1·90
Further areas now populous	2,087,023	2,673,844	1·28
Areas surrounding towns	2,416,843	1,444,815	0·60
Rural districts sparsely peopled	8,768,581	742,757	0·08
Other rural districts	22,808,515	4,791,643	0·21
England and Wales	37,317,885	29,002,525	—

The difference between the area of the rural districts in the last line in 1801 and that in 1891 is thus made up:—

	Acres.
Further populous areas	2,087,023
New towns, with their vicinage	358,553

It is impracticable to distinguish all the places which in 1891 contained 1,000 inhabitants upon a narrow area, and which on that ground might be deemed to be towns. In these latter days many places might answer such a definition without really being towns in the old sense, namely, centres of trade and intercourse. So many districts contain crowded mining villages or groups of dwellings of persons employed in factories, where the few shops are hardly adequate to meet local necessities, and where no one would dream of resorting for supplies, that even places of 4,000 inhabitants and upwards of a more town-like character, cannot be distinguished with certainty in every instance. However, I have essayed to arrive at an approximation, and I find—

429 towns out of 577 (viz., 507, shown in the table for 1801, and 70 new towns) showed a total population of	18,318,685
And 46 towns, mostly standing in populous districts, but in a few cases included in the vicinage of earlier towns, or seated in rural districts, had a total population of	271,863
Total, 475 towns of at least 4,000 inhabitants	18,590,548

or on an average about half a million of town population per million acres.

These figures compare with 113 towns having a total population of 2,322,762 in 1801.

Recurring to the summary table, it will be seen that whilst the areas attributed to the towns are enlarged, population has advanced in a much greater proportion, so that the calculated densities are higher. These are of little consequence in themselves, the true densities within properly defined boundaries being certainly even higher. The populous areas, besides being seven times as extensive, are much more densely peopled. The areas in the neighbourhood of towns, though in many cases thinly peopled, show almost double the density[3] (on the average) which they had in 1801. The rural districts proper exhibit a moderate increase in density; these still include the 63 small towns already referred to. Five-sixths of the area of England and Wales thus shows very little change in the ninety years.

I subjoin another table of ratios:—

(*a.*) The number of towns with 4,000 inhabitants and upwards per million acres, and the percentage of population living in such towns.

(*b.*) The proportion per cent. of acreage occupied by populous districts; also the proportion per cent. of population inhabiting same.

(*c.*) The proportion per cent. of acreage occupied by rural districts, distinguishing those sparsely peopled.

(*d.*) The density of population in each class of rural districts.

(*e.*) The proportion per cent. of population living in rural districts.

1891.	*a.* Towns.		*b.* Populous.		*c.* Rural Acreage.		*d.* Rural Density.		*e.* Rural Population.
	Number.	Percentage.	Acreage.	Population.	Sparse.	Other.	Sparse.	Other.	
Cumberland, &c.	5½	37	4	18	71	22	0·07	0·17	40
Durham, &c.	9	56	13	32	63	19	0·07	0·19	10
North and East Ridings	6	57	2½	10	65	28	0·09	0·16	28
West Riding	35	71	17	19	28	40	0·08	0·21	8
Lancashire and Cheshire	42	82	15	10	13	51	0·08	0·24	6
Lincoln, Notts, &c.	9	50	6½	17	7	80	0·11	0·18	29
Stafford, Warwick, &c.	27	72	8½	8	2	73	0·11	0·21	12
Wales, Salop, &c.	7½	34	5	21	44	46	0·08	0·20	40
Gloucester, Devon, &c.	9	44	5	12	17	71	0·10	0·20	36
Wilts, Hants, &c.	11½	54	4	8	8	80	0·12	0·20	33
Metropolitan circle	14	78	7	4½	—	72	—	0·26	10
Northampton, &c.	6	38	4	9	7	83	0·12	0·20	44
Norfolk, &c.	5½	35	2	5½	—	94	—	0·21	55
England and Wales	13	64	6½	11½	23½	61	0·08	0·21	19

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[3] This is of course a matter of estimation, but I have endeavoured to avoid overstating the town populations in 1891, and thus may have deducted overmuch.

The proportion of town population being now more than 64 per cent., against 36 per cent. in 1801, the rural population has fallen from 53 down to 19 per cent. In 1801 the lowest proportion of rural population was 30 per cent., but in 1891 the minimum was 6 per cent., and five divisions showed ratios not higher than 12 per cent. If, however, the metropolis itself (with its belt of environs) could be separated from the rest of the division, the surrounding area would not differ widely in the constitution of its population from the adjacent divisions; 82 per cent. of its area and 39 per cent. of its population would be rural.

The figures contained in the two summaries (for 1801 and 1891) illustrate in an impressive manner the transfer of political and industrial power which has been gradually accomplished in less than a century, and should convince us that the England of to-day is in many respects unlike the England of earlier times. Still, it will be found that active progress of population has been restricted to little more than 4 millions of acres out of 37 millions, and therefore in a measure the face of the country is little changed. The old outcry as to London devouring the country, though it has much more justification now than it had in the time of Smollett, is seen to have been based on exaggeration.

It will be noted that in very many parts of the country the rural population has a density but little below or above ·20 per acre (or 128 per square mile), which average includes villages and a few small towns, as already indicated.

Here it may be useful to make a somewhat obvious remark. Rural parishes being in fact of very unequal extent, some may not contain any collection of habitations calling for notice, whilst others may embrace one or more considerable villages, or even a small town. It would clearly be unphilosophical to cut up the open country into statistical areas so small in extent as to be often almost vacant of population, yet sometimes apparently densely peopled. Areas of 10,000 to 20,000 acres, with about 2,000 to 4,000 inhabitants, would be small enough for statistical purposes, if only we could depend upon each town being assigned a suitable area, so to speak carved out of the rural district.

Populous areas doubtless call for less extensive limits, and as respects the subdivision of large towns, I am inclined to think the smallest statistical units should not fall below 200 acres, and that the area in which growth is extending might with advantage be subdivided into spaces of 400 to 1,000 acres, so as to facilitate our observations as to the gradual extension of suburbs.

Progress of Population.

In tracing the progress of population during the ninety years

1801-91, it has been found convenient to represent the towns by *fixed* areas, such as in 1891 represented them fairly, though inevitably including in most cases a certain extent of the adjoining country, rather than to attempt (mainly by means of estimates) to follow their gradually extending areas. The rates of increase so arrived at will usually be rather less rapid than those of the true towns, but are less open to cavil.

First, taking collectively the 283 towns containing fully 2,000 inhabitants in 1801, we have the following table:—

Year.	Population.		Increase per Cent.	Density per Acre.
	Number.	Increase.		
1801	3,425,423	—	—	1·8
'11	4,061,379	635,956	18·6	2·1
'21	4,996,643	935,264	23·0	2·6
'31	6,196,631	1,199,988	24·0	3·2
'41	7,450,923	1,254,292	20·2	3·9
'51	8.951,175	1.500,252	20·1	4·6
'61	10.550,104	1,598.929	17·9	5·5
'71	12,367,794	1,817,690	17·2	6·4
'81	14.747,937	2,380,143	19·2	7·6
'91	16,881,482	2,133,545	14·5	8·7

The area of the districts included in this table is 1,929,724 acres; the towns themselves are roughly estimated to have occupied no more than—

237,037 acres in 1801
666,018 ,, '91

including one new town existing at the latter date.

The actual numerical increase in each decennium regularly advanced until the last, when it showed a check. The ratios of increase, always considerable, varied from time to time, the latest being the lowest. The details of the matter will be more fully shown in a later section of this paper.

Next, taking collectively 224 towns, containing 1,000 inhabitants and upwards in 1801, we have for 223 of them:—

Year.	Population.		Increase per Cent.	Density per Acre.
	Number.	Increase.		
1801	462,602	—	—	0·6
'11	532,207	69,605	15·0	0·7
'21	642,658	110,451	20·8	0·8
'31	747,050	104.392	16·2	0·9
'41	850,680	103,630	13·9	1·1
'51	960,154	109,474	12·9	1·2
'61	1.101,543	141,389	14·7	1·4
'71	1.303,703	202,160	18·4	1·6
'81	1.551.752	251,049	19·3	1·9
'91	1,800,329	245,577	15·8	2·2

The area of the districts representing these towns was collectively 808,275 acres, the towns themselves being treated as occupying:—

99,777 acres in 1801
144,444 " '91

The remaining town belonging to this class is merged in the district of one of the new towns.

These towns showed a somewhat irregular progress; accelerated after 1851, but checked to a certain extent in the last decennium.

There remain 70 new towns, separately shown in my table for 1891; the progress of all but one is exhibited in the following table:—

Year.	Population.		Increase per Cent.	Density per Acre.
	Number.	Increase.		
1801	89,883	—	—	0·25
'11	116,405	26,522	29·5	0·32
'21	148,993	32,588	28·0	0·41
'31	198,959	49,966	33·5	0·55
'41	292,177	93,218	46·9	0·81
'51	379,872	87,695	30·0	1·06
'61	533,192	153,320	40·4	1·48
'71	734,110	200,918	37·7	2·04
'81	992,322	258,212	35·2	2·79
'91	1,257,095	264,773	26·7	3·50

The districts representing these towns had an area of 359,053 acres, whereof, it is roughly estimated, 79,665 acres were occupied by the actual towns in 1891. These included 69 new towns and one old town, included in the district of a new town. The remaining "new" town is included in the district of one of the 283 larger towns.

Up to 1831 no great movement of population had taken place in these districts; but since 1851 the accretions have been considerable, although the rate of progress fell off in the last decennium.

The populous areas distinguished in 1801, and occupying 346,796 acres, showed the following steps of progress:—

Year.	Population.		Increase per Cent.	Density per Acre.
	Number.	Increase.		
1801	227,593	—	—	0·66
'11	263,196	35,603	15·6	0·76
'21	314,985	51,789	19·7	0·91
'31	356,087	41,102	13·0	1·03
'41	402,151	46,064	13·0	1·16
'51	437,895	35,744	8·8	1·26
'61	479,367	41,472	9·5	1·38
'71	530,749	51,382	10·7	1·54
'81	601,167	70,418	13·3	1·73
'91	660,179	59,012	9·8	1·90

As these districts are principally within the divisions of Lancashire and Cheshire, the West Riding, and Durham, it is somewhat curious that they have not been more progressive in population. During several of the decennial periods the increase cannot have been so great as that which would have been due to the excess of births over deaths, had there been neither immigration nor emigration.

The additional populous areas shown in the 1891 table, occupying 2,087,023 acres, showed more rapid progress, as follows:—

Year.	Population.		Increase per Cent.	Density per Acre.
	Number.	Increase.		
1801	529,297	—	—	0·25
'11	616,954	87,657	16·6	0·30
'21	735,162	118,208	19·2	0·35
'31	862,883	127,721	17·4	0·41
'41	1,037,498	174,615	20·2	0·50
'51	1,181,375	143,877	13·9	0·57
'61	1,444,928	263,553	22·3	0·69
'71	1,783,593	338,665	23·4	0·85
'81	2,251,375	467,782	26·2	1·08
'91	2,673,844	422,469	18·8	1·28

It will be noticed that while the elder "populous districts" took fifty years to advance from density 0·66 to density 1·26, the above districts made almost as great an advance in the thirty years 1861-91.

In both cases there was a minimum rate of increase in 1841-51, and a decided decline in the last decennium.

The rural districts which in 1891 were still almost entirely rural, occupying 31,577,096 acres, at first increased in population, and then diminished, as shown in the following table:—

Year.	Population.	Movement.		Per Cent.		Density per Acre.
		Increase.	Decrease.	Increase.	Decrease.	
1801 ...	4,103,072	—	—	—	—	0·13
'11	4,434,617	331,545	—	8·1	—	0·14
'21	5,077,292	642,675	—	14·5	—	0·16
'31	5,446,606	369,314	—	7·3	—	0·17
'41	5,783,091	336,485	—	6·2	—	0·18
'51	5,918,869	135.778	—	2·3	—	0·19
'61	5,845,171	—	73,698	—	1·2	0·19
'71	5,856.268	11,097	—	0·2	—	0·19
'81	5,668,481	—	187,787	—	3·2	0·18
'91	5,534,400	—	134,081	—	2·4	0·18

The period 1811-21, marked by the close of the Napoleonic wars, was that of highest increase. In many European countries the augmentation of births after 1814 was very remarkable. The striking check to rural populations after 1841 was due, I think, partly to the new Poor Law, as well as to the introduction of railways (which greatly facilitated the working of minerals), the extended use of agricultural machinery, and the conversion of much arable land into permanent pasture.

The sections of the country thus shown may be here gathered into the compass of a small summary table:—

Summary No. 3.	Acres.	Population.		Increase per Cent.		
		1801.	1891.	1801-31.	1831-61.	1861-91.
283 towns, including London	1,929,724	3,425,423	16,881,482	81	70	60
224 smaller towns	808,275	462,602	1,800,329	61	47	63
70 new towns	359,053	89,883	1,257,095	121	168	136
Populous areas (old)	346,796	227,593	660,179	57	35	38
,, (new)	2,087,023	529,297	2,673,844	63	67	85
Belt round London*	209,918	54,666	195,196	52	35	74
Rural districts	31,577,096	4,103,072	5,534,400	33	7	decrease 5
England and Wales	37,317,885	8,892,536	29,002,525	—	—	—

* In the first and second summary tables this district is included amongst "areas "surrounding towns."

It is noticeable that a tendency to decrease of population in the open country would affect the towns which serve the rural districts. Their increase is at least checked, and in not a few instances absolute decrease is found to have occurred.

In order to separate those towns and districts which are found to be least progressive from the rest, certain subdivisions have been found convenient. The 282 towns in the first class, excluding London, are divided into—

112 towns having 4,000 inhabitants in 1801, whereof 42 are classed as unprogressive.

170 towns having 2,000 to 4,000 inhabitants in 1801, whereof 99 are classed as unprogressive.

The 223 towns in the next class (excluding one which goes with the "new" towns) are divided into 76 progressive, 147 unprogressive.

The "populous" areas are again divided into progressive and unprogressive, the standard in all these cases being that places which in 1801-91 did not increase in the ratio 1 to 3 are classed as unprogressive.

The rural districts are divided into—

(*a.*) Those which are sparsely inhabited.
(*b.*) Those others which in 1841-91 showed an increase of population reaching 15 per cent., and
(*c.*) The remainder, being the mass of rural districts.

The progress of population in these subdivisions will now be set forth; first with reference to towns outside the metropolis:—

	Towns 4,000 inhabitants and upwards.		Towns 2,000 to 4,000.		Towns 1,000 to 2,000.		69 New Towns.
	42 Unprogressive.	70 Progressive.	99 Unprogressive.	71 Progressive.	147 Unprogressive.	76 Progressive.	
1801	358,012	1,370,474	347,609	289.179	291,382	171,220	89,883
'11........	394.265	1,660.647	390,554	355.510	320,970	211,237	116.405
'21........	478.016	2,092,874	454.264	448,806	374,718	267.940	148,993
'31........	531.927	2,765.075	517,658	561,412	415,534	331,516	198,959
'41........	565,195	3,500,224	555.299	688,666	450,619	400.061	292,177
'51........	609,781	4,349.821	594.842	814,134	467,501	492,653	379,872
'61........	628,616	5,230,182	611,681	969,593	469,244	632,299	533,192
'71........	656,468	6,200,752	625.310	1,135,327	493,153	810,550	734,110
'81........	696.000	7,426,300	653.963	1,361,773	515,275	1,039.477	992,322
'91........	719,099	8,492,739	676,049	1,551,346	527,180	1,273,149	1,257,095

Increase per Cent.

1801–31	48·6	101·8	48·9	94·1	42·6	93·6	121·4
'31–61	18·2	89·2	18·2	72·7	12·9	90·7	168·0
'61–91	14·4	62·4	10·5	60·0	12·3	101·4	135·9

The increase of population in the larger "progressive" towns declined in the last period to rather less than two-thirds of the rate shown in the first, yet it remained well above the "natural" increase due to the excess of births above deaths; in other words, immigration, though much diminished, had not ceased. In those "progressive" places which had less than 2,000 inhabitants in 1801, the increase (and of course the current of immigration) was fully sustained. In all the unprogressive groups, the average increase in the first thirty years was similar, being about equivalent to the "natural" increase, falling in the succeeding sixty years to figures indicating active emigration.

Next, with regard to "populous" districts and "rural' districts:—

	Populous in 1801.		Populous (New).		Rural.		
	Un-progressive.	Progressive.	Un-progressive.	Progressive.	(*a.*) Sparse.	(*b.*) Growing.	(*c.*) The rest.
1801........	131,490	96,103	228,493	300,804	651,359	441,167	3,010,546
'11........	150,288	112,908	258,163	358,791	705,837	485,390	3,243,390
'21........	173,707	141,278	299,712	435,450	791,879	559,557	3,725,856
'31........	192,781	163,306	335,315	527,568	832,922	604,392	4,009,292
'41........	210,822	191,329	363,685	673,813	860,870	664,072	4,258,149
'51........	220,274	217,621	381,377	799,998	867,643	711,162	4,340,064
'61........	222,996	256,371	393,509	1,051,419	856,757	750,673	4,237,741
'71........	228,807	301,942	413,024	1,370,569	847,160	821,741	4,187,367
'81........	233,684	367,483	438,409	1,812,966	801,459	876,484	3,990,538
'91........	243,991	416,188	465,399	2,208,445	742,757	938,932	3,852,711
				Increase per Cent.			
1801-31	46·6	69·9	46·7	75·4	27·9	37·0	33·3
'31-61	15·7	57·0	17·4	99·3	2·9	24·2	5·7
'61-91	9·4	62·3	18·3	110·0	dec. 13·3	25·1	dec. 9·1

The remarks made about the progressive and unprogressive towns might be repeated in reference to the populous districts. The older "progressive" districts hardly sustained their rate of increase, but the newer ones showed increasing immigration. The "unprogressive" of either class showed rates of increase very like those of unprogressive towns.

Even in the first thirty years, the whole of the rural districts were losing part of their "natural" increase. The selected slightly progressive districts (covering only 3,445,211 acres) have throughout retained a good part of this increase, but the rest lost nearly all of it in 1831-61, and in the final thirty years their increase was converted by emigration into a serious decrease.

To complete this review, the progress of population in London (a wide definition of its limits has been adopted) and in a belt of country surrounding London, is shown below:—

	London.	Increase per Cent.	Belt round London.	Increase per Cent.
1801	1,060,149	—	54,666	—
'11	1,260,403	18·9	63,018	15·3
'21	1,522,683	20·8	73,519	16·7
'31	1,820,559	19·6	83,033	12·9
'41	2,141,539	17·6	92,612	11·5
'51	2,582,597	20·6	98,269	6·1
'61	3,110,032	20·4	111,919	13·9
'71	3,749,937	20·6	136,049	21·6
'81	4,609,901	22·9	158,405	16·4
'91	5,442,249	18·1	195,196	23·2
1801-31....	—	71·7	—	51·9
'31-61....	—	70·8	—	34·8
'61-91....	—	75·0	—	74·4

It is somewhat surprising to find that the increase of population in London has been so well sustained. The latest decennium, in this as in other cases, shows a decided check, and considering that the populations from which in times past so many immigrants have reached the metropolis are now declining in absolute importance, and still more in relative numbers, it cannot reasonably be expected that the rate of increase in the next thirty years will be so high as 75 per cent. It will of course be much higher in the surrounding "belt."

If we bring into a focus all the most progressive towns and districts, we have the following table:—

	Acres.	Population.			Increase per Cent.		
		1801.	1851.	1891.	1801–31.	1831–61.	1861–91.
London	243,561	1,060,149	2,582,597	5,442,249	71·7	70·8	75·0
,, belt around	209,918	54,666	98,269	195,196	51·9	34·8	74·4
70 towns 4,000 and upwards	703,177	1,370,474	4,349,821	8,492,739	101·8	89·2	62·4
71 towns 2,000 to 4,000	332,612	289,179	814,134	1,551,346	94·1	72·7	60·0
76 towns 1,000 to 2,000	347,536	171,220	492,653	1,273,149	93·6	90·7	101·4
69 new towns	359,053	89,883	379,872	1,257,095	121·4	168·0	135·9
Populous in 1801	149,976	96,103	217,621	416,188	69·9	57·0	62·3
,, (new)	1,513,686	300,804	799,998	2,208,445	75·4	99·3	110·0
	3,859,519*	3,432,478	9,734,965	20,836,407	—	—	—

* As stated later on, rural districts with an area of 612,348 acres, showed 20 per cent. increase of population in 1881-91.

The remaining towns, with the less progressive populous districts and the whole of the rural districts aggregated:—

In 1801	5,460,058	inhabitants.
,, '51	8,192,644	,,
,, '91	8,166,118	,,

upon an area of 33,458,366 acres.

It will have been noticed that only about one-fifth of the population of the larger provincial towns, as they stood in 1801, turned out to be unprogressive, but more than half of the towns then showing less than 4,000 inhabitants proved unprogressive, and the same may be said of the districts then defined as "populous."

The decennial progress in each of the subdivisions of towns and country districts is shown in Appendix **B**.

It will be found, with reference to the "unprogressive" districts, that there is much uniformity—

(*a.*) In the comparatively large increase of population in the decennium 1811-21.

(*b.*) In the maintenance of a reduced, but generally substantial rate of increase in the twenty years 1821-41.

(*c.*) In the prevalence of very low rates of increase in the unprogressive towns and populous districts in the forty years 1851-91.

(*d.*) In there being an absolute decrease of population in the rural districts, save those specially selected, in each decennial period from 1851 to 1891.

The progressive towns and districts did not show any specially augmented rate of progress in 1811-21, save in the case of districts already "populous" in 1801.

Progress of Population (Local).

It will be useful in the first instance to measure the proportionate areas in which population was dense in 1801 and 1891 (including the districts outside towns), and those in which population has been shown to be progressive, distinguishing the new areas (new towns and populous districts) from those which were already "populous" in 1801:—

	Per Cent. of Area Occupied by					
	Populous Districts.			Progressive Districts.		
	1801.	New.	Total 1891.	1801.	New.	Total 1891.
Cumberland, &c.	3·3	3·7	7·0	1·2	3·2	4·4
Durham, &c.	6·8	11·3	18·2	4·0	10·8	14·8
North and East Ridings	3·8	2·8	6·6	2·0	2·4	4·3
West Riding	19·2	12·0	31·2	12·7	8·8	21·5
Lancashire and Cheshire	20·6	15·8	36·4	16·9	12·3	29·1
Lincoln, Notts, &c.	6·7	6·3	13·1	3·9	4·1	8·1
Stafford, &c.	15·7	9·8	25·5	10·1	7·9	18·0
Wales, Salop, &c.	3·5	6·4	9·9	1·6	6·0	7·6
Gloucester, Devon, &c.	7·4	3·8	11·2	1·9	2·1	3·9
Wilts, Hants, &c.	6·1	4·9	11·0	2·1	3·7	5·8
Metropolitan circle	14·7	12·6	27·3	10·9	9·9	20·8
Northampton, &c.	5·5	4·2	9·7	2·5	2·6	5·1
Norfolk, &c.	3·5	2·2	5·7	0·8	1·1	1·9

The liberal limits ascribed to London, and the inclusion of the "belt" outside those limits amongst the new populous and progressive areas, may to some extent overcolour the picture, but it can hardly be questioned that the five divisions of London, Lancashire, West York, Stafford, and Durham are now preeminent for the existence within their limits of dense and progressive populations. The important division of Gloucester, Devon, &c., has sunk from the fifth to the seventh place, whilst Wales and Cumberland, as well as Durham, show a marked advance. The Norfolk division is now at the bottom of the list.

If we exclude the acreage which is but sparsely populated, we have the following comparison of the proportionate extent of progressive districts in 1891:—

	Total Area (excluding Sparse). Acres.	Area of "Progressive" Towns which had 4,000 Inhabitants in 1801.		Area of other Progressive Districts.	
		Acres.	Per Cent.	Acres.	Per Cent.
Lancashire and Cheshire	1,706,073	173,702	10·2	394,761	23·1
Stafford, Warwick, &c.	1,797,573	124,661	6·9	204,919	11·4
West Riding............................	1,270,583	93,469	7·4	288,804	22·7
Lincoln, Notts, &c.	3,248,428	59,938	1·8	221,741	6·8
Durham and Northumberland	759,226	47,809	6·3	255,371	33·6
North and East Ridings...... ..	678.405	29,482	4·3	55,261	8·1
Wales, Salop, &c.	3,706,074	27,533	0·7	472,978	12·8
Cumberland and Westmorland	426,962	14,568	3·4	50,049	11·7
Metropolitan circle	4,091,180	487,475*	11·9	367.954	9·0
Wilts, Hants, &c.	2,632,169	38,382	1·5	129,530	4·9
Gloucester, Devon, &c.	4,068,169	26,608	0·7	165,115	4·1
Norfolk, &c.............................	2,788,041	19,236	0·7	34,009	1·2
Northampton, &c.	1,376,421	13,793	1 0	62,371	4·5
	28,549,304	1,156,656	4·0	2,702,863	9·5

* Including London "belt."

Considering the absence of mines and almost of manufactures within the metropolitan circle, the extent of country, outside London in its widest sense, which is occupied by progressive populations, is noticeable. The remaining divisions in the south and east show much lower figures. The high ratio in Durham is of course due to the extension of coal mining.

Progress of Towns.

I have already furnished the details as to the aggregate population at each census of the area which I have marked off as representing London in 1891, but it may be useful to show the area which could have been allotted to London at each census, and the population therein, together with the extent and population of the remaining parishes, thus:—

	London.		Added in the next 20 Years.		Added Later.	
	Acres.	Population.	Acres.	Population.	Acres.	Population.
1801....	44,035	922,837	—	—	199,526	137,312
'11....	44,035	1,086,998	565	2,259	198,961	171,146
'21....	44,035	1,320,265	10,754	18,135	188,772	183,757
'31....	44,600	1,591,644	23,848	59,899	175,113	169,016
'41....	54,789	1,888,128	59,259	128,906	129,513	121,415
'51....	68,448	2,363.259	134,871	190.188	40,242	29,150
'61....	114,048	2,949,353	114,261	148,798	15,252	11,881
'71....	203,319	3,710,109	40,242	39,828	—	—
'81....	228,309	4,593,547	15,252	16,354	—	—
'91....	243,561	5,442,249	—	—	—	—

This table shows that in 1801, when the belt round London, on 209,918 acres, showed only 54,666 inhabitants, the parishes which lay nearer had 137,312 inhabitants on 199,526 acres. In 1891 the belt had reached 195,196 inhabitants, and was therefore more densely peopled than the nearer parishes had been in 1801; thus we are led to conclude that the additions to the metropolitan area which were so considerable after 1851 will again reach importance before long.

The 282 other towns which had at least 2,000 inhabitants in 1801 may be classified as to their rates of increase as follows:—

	Movement Slow to Middling.					Movement Rapid.			
141 Progressive.	Decrease over 10%.	Decrease 10% to Increase 10%.	Increase 10—30.	Increase 30—50.	Increase 50—70.	Increase 70—90.	Increase 90—110.	Increase 110 and upwards.	Totals.
30 years 1801-31	—	—	7	18	23	27	30	36	141
,, '31-61	—	5	11	32	30	19	18	26	141
,, '61-91	—	8	24	30	33	16	14	16	141
141 Unprogressive.									
30 years 1801-31 ...	1	3	21	61	37	12	4	2	141
,, '31-61	5	49	60	18	8	—	1	—	141
,, '61-91	20	57	42	15	6	1	—	—	141

It is curious that exactly one-half of these towns (in number) belonged to the non-progressive categories. The tables show that the remarkable check to their progress after 1831 was more than maintained in the final period of thirty years. The following lists show which progressive towns met with the severest checks to their increase, and which of those in the "unprogressive" categories made a rapid advance at one time:—

Progressive.	Increase per Cent.		
	1801-31.	1831-61.	1861-91.
Plymouth*	75·0	69·3	23·0
Coventry	70·3	52·6	27·3
Worcester	85·3	18·2	22·9
Oxford	81·2	27·4	59·8
Lancaster	35·5	13·7	97·4
Macclesfield	184·1	22·4	0·2
Dudley	128·0	95·2	1·7
Bilston	109·6	68·1	3·7†
Kidderminster	145·2	6·7†	63·2
Merthyr Tydfil	186·6	125·5	16·6
Taunton	98·0	26·1	22·2
Ashton-under-Lyne	273·5	141·0	10·7
Workington	12·2	0·8	267·2
Rotherham	26·8	137·1	105·6
Durham	34·6	100·4	14·1
Gainsborough	47·8	5·1†	128·9
Gravesend	108·1	98·9	27·1
Heywood (Lancs.)	117·5	62·6	14·4
Northwich	65·8	29·1	61·0
Margate	116·9	3·1†	113·3
Loughborough	138·9	0·1	69·3
Sedgley Coseley	108·4	78·0	0·6
Weymouth	113·3	33·2	21·4
Darlaston	74·4	93·8	11·9
Burton-on-Trent	21·7	147·1	183·4
Wednesbury	102·8	160·4	15·4
Tipton	249·3	93·1	1·5
Folkestone	16·0	125·3	147·0
Brierley Hill	134·5	126·0	6·3
Faversham	27·0	44·1	67·0
Bridgwater	114·8	55·2	10·1
Uxbridge	76·8	56·3	29·7
Banbury	57·9	59·5	25·1
Tamworth	29·1	39·4	71·7
Haslingden	99·1	22·9	53·6
Cheltenham	553·7	73·3	10·5
Todmorden	99·1	29·0	18·6
Oswestry	67·6	20·9	56·9
Teignmouth	125·9	22·2	15·7
Oldbury	70·5	202·0	29·5
Ramsbottom (Lancs.)	98·1	35·8	27·4
Carnarvon	110·8	30·0	15·9
Willenhall	85·6	195·8	12·2
Atherton (Lancs.)	28·7	41·3	168·0
Yeovil	113·4	43·3	29·0
Camborne	60·0	82·6	4·6
Godalming	33·0	27·6	81·7
Hitchin	64·8	47·3	23·9

Unprogressive.	Increase per Cent.		
	1801-31.	1831-61.	1861-91.
Boston*	86·5	33·1	1·0†
Trowbridge	87·3	3·5†	13·5
Carmarthen	79·4	0·4	3·5
Truro	86·8	22·3	14·3†
Lewes	76·9	8·8	13·4
Chichester	74·0	7·4	11·2†
Belper	75·3	20·5	9·6
Sheerness	43·6	100·0	0·9
Stourbridge	79·2	42·9	6·9
Congleton	161·3	25·5	15·5†
Barnstaple	89·1	15·4	36·3
Whitefield (Lancs.)	90·2	11·8	17·6
Dawley Magna (Salop)	77·7	60·1	36·5†
Maidenhead	21·9	36·0	80·6
Redruth	108·7	40·4	10·3†
Wigton	109·6	22·7†	0·3†
Spalding	94·0	34·8	4·5
Foleshill	130·3	16·8	6·4
Stratford-on-Avon	78·0	30·2	27·3
St. Ives (Cornwall)	76·0	47·1	13·3†

* The towns are arranged in order of their magnitude in 1801. † Decrease per cent.

The towns shown in these lists are ranked in the order of their size in 1801. The 141 "unprogressive" towns were smaller on the average than the "progressive" towns, the largest of them being Norwich, Bath, Exeter, and Chester. A previous table supplies data as to their aggregate population.

The figures illustrate the great variety of fortune of particular places, whilst showing a progressive decline in the general tendency to increase, in either class. In these circumstances it will not be out of place to submit some data as to the largest towns, and also those which are noticeable on account of rapidity or slowness of growth.

Before doing so, I shall supplement the little table just given with a similar one showing the progress of 73 towns, which although they had less than 2,000 inhabitants in 1801, had attained 10,000 inhabitants and upwards in 1891:—

	Movement Slow to Middling.					Movement Rapid.			
	Decrease over 10%.	Decrease 10% to Increase 10%.	Increase 10 @ 30.	Increase 30—50.	Increase 50—70.	Increase 70—90.	Increase 90—110.	Increase 110 and upwards.	Totals.
30 years 1801-31	—	—	7	8	11	11	9	27	73
,, '31-61	—	3	2	6	8	8	5	41	73
,, '61-91	—	1	5	5	6	7	10	39	73

These places naturally show high rates of increase for the most part, and their increase has been well maintained.

Coming now to individual towns, the following were the largest in 1891. I give in each case the population and increase within the full area assigned to the place at that date, usually rather in excess of a scientific area:—

	Increase, 1801-91, as from 100 to	Increase per Cent.			Population.	
		1801–31.	1831–61.	1861–91.	1801.	1891.
Manchester	728	131·1	97·5	59·5	121,141	881,622
Liverpool	979	150·5	151·2	55·6	89,127	872,999
Birmingham	761	96·9	121·7	74·4	79,196	602,618
Leeds	690	132·1	67·7	77·4	53,162	367,059
Sheffield	709	99·3	101·1	76·9	47,179	334,538
Newcastle	672	68·7	103·1	96·1	46,215	310,381
Bristol.........................	433	76·3	47·8	66·1	70,419	304,866
Potteries......................	684	107·0	99·8	65·4	35,612	243,674
Nottingham	572	104·8	56·3	78·6	41,649	238,242
Bradford (Yorkshire)	1,361	205·7	133·9	90·3	15,498	210,964
Hull...............	643	78·2	80·1	100·4	31,892	205,085
Portsmouth	415	41·6	86·4	57·3	44,521	184,703
Leicester......................	898	125·6	63·5	143·4	19,696	176,909
Plymouth	364	75·0	69·3	23·0	43,286	157,716
Brighton......................	1,855	451·2	109·2	60·9	7,662	142,129
Sunderland................	567	63·0	110·6	65·1	24,998	141,693
Cardiff	5,306	169·0	497·3	230·2	2,664	141,339
Oldham	1,093	169·3	123·4	81·7	12,024	131,463
Blackburn	814	114·2	123·4	70·2	15,375	125,193
Preston	717	139·1	128·7	31·2	17,148	122,983
Bolton.........................	597	135·2	67·9	51·2	20,374	121,634
Halifax	428	86·1	57·0	46·6	23,772	101,823
Norwich	274	65·8	22·5	34·8	36,854	100,970
Derby	789	113·6	97·1	87·4	12,472	98,410

Next, taking the cases of most rapid increase amongst smaller towns, which in 1801 had at least 4,000 inhabitants:—

	Increase, 1801-91, as from 100 to	Increase per Cent.			Population.	
		1801-31.	1831-61.	1861-91.	1801.	1891.
Southampton	878	130·5	153·8	50·1	10,472	91,980
Swansea	861	99·4	115·7	100·1	10,670	91,851
Ashton-under-Lyne*	997	273·5	141·0	10·7	8,492	84,654
South Shields	712	70·3	87·9	122·5	11,011	78,391
Walsall	720	44·8	169·9	84·3	10,884	78,377
Northampton	825	101·7	104·6	99·9	9,329	76,921
West Bromwich	1,046	169·5	172·7	42·3	5,687	59,474
Merthyr Tydfil	754	186·6	125·5	16·6	7,705	58,080
Burton-on-Trent	853	21·7	147·1	183·4	5,433	46,320
Darlington	780	81·9	79·9	138·4	5,000	39,007

* Including Stalybridge and Dukinfield.

Thirdly, in addition to Cardiff, Brighton, and Bradford, which appear in the first list, there are many other examples of towns practically new, from which the following are taken :—

	Increase, 1801-91, as from 100 to	Increase per Cent.			Population.	
		1801-31.	1831-61.	1861-91.	1801.	1891.
Ports.						
Middlesboro'	13,104	28·4	2581·3	280·6	581	76,135
Stockton	1,565	93·1	106·0	293·3	4,176	65,342
Hartlepool	3,959	29·0	1199·7	136·2	1,639	64,882
Grimsby	2,949	156·3	157·6	346·6	1,911	56,364
Newport (Mon.)	2,934	316·2	250·3	101·2	1,904	55,858
Barrow-in-Furness	5,420	25·5	317·7	934·2	954	51,712
Jarrow	3,248	129·8	80·5	683·1	1,566	50,858
Llanelly	1,078	157·3	126·0	85·4	2,972	32,034
Goole	2,903	328·2	177·3	144·4	542	15,735
Barry	3,368	18·5	9·0	2507·5	394	13,272
Tilbury	1,805	84·3	77·0	453·2	677	12,219
Industrial.						
Burnley	1,655	155·9	183·9	127·7	5,224	86,480
St. Helens	1,018	87·5	191·2	86·4	7,573	77,076
Ebbw Vale, Tredegar and Nantyglo	2,897	642·7	186·0	36·4	2,239	64,866
Smethwick*	1,939	85·8	302·1	159·5	2,275	44,105
Aberdare	2,753	166·6	715·4	26·7	1,486	40,917
Accrington	1,255	104·2	181·5	118·2	3,077	38,603
Swindon	2,755	45·4	293·6	381·3	1,198	33,001
Luton	1,047	83·9	213·0	81·8	3,095	32,401
Nelson	1,350	103·0	55·8	326·8	2,322	31,339
Widnes†	2,823	86·8	247·7	334·6	1,063	30,011
Crewe	23,769	22·3	5,412·8	252·5	121	28,761
Batley	1,116	88·1	192·8	102·6	2,574	28,719
Farnworth (Lancs.)	1,651	103·5	197·8	172·5	1,439	23,758
Cannock (Staffs.)	1,517	30·3	64·5	607·6	1,359	20,613
Runcorn	1,425	265·1	99·9	95·3	1,379	19,650
Castleford (W. Riding)	1,783	43·9	239·7	264·9	793	14,143
Festiniog	1,513	125·1	176·3	143·2	732	11,073
Normanton	3,708	2·5	98·9	1,717·8	276	10,234
Swinton (W. Riding)	2,052	164·7	154·8	204·2	473	9,705

* Might be ranked as a Birmingham suburb. † Opposite Runcorn.

	Increase, 1801–91, as from 100 to	Increase per Cent.			Population.	
		1801–31.	1831–61.	1861–91.	1801.	1891.
Residential.						
Hastings	1,771	222·2	129·1	139·8	3,175	56,225
Southport	2,256	130·0	182·2	247·5	2,456	55,413
Bournemouth‡	1,253	42·6	56·8	460·2	4,262	53,384
Cheltenham	1,252	553·7	73·3	10·5	4,031	50,464
Eastbourne	1,777	65·2	95·4	450·4	2,015	35,799
Leamington	3,762	871·0	174·2	41·3	723	27,197
Torquay	3,047	327·5	358·4	55·5	838	25,534
Blackpool	1,731	68·2	130·4	346·8	1,445	25,014
Reigate	1,008	51·2	193·6	127·0	2,246	22,646
Worthing	1,575	322·6	40·8	164·6	1,119	17,622
Weston-super-Mare	11,246	849·3	513·6	93·1	138	15,520
Southend	1,017	86·8	51·2	259·9	1,213	12,333
Sale§ (Cheshire)	1,178	34·8	174·6	218·2	819	9,644

‡ The area assigned includes Christchurch.

§ Virtually a suburb of Manchester.

Finally, I shall show the towns, already of some importance in 1801, where the rates of increase since then have been lowest :—

	Increase, 1801–91, as from 100 to	Increase per Cent.			Population.	
		1801–31.	1831–61.	1861–91.	1801.	1891.
*In the North and West.**						
Worcester	276	85·3	18·2	22·9	17,078	47,076
Chester	272	42·2	46·6	30·3	15,158	41,171
Shrewsbury	240	52·0	26·3	25·2	12,044	28,943
Whitehaven	186	47·9	24·3	1·0	10,628	19,733
Berwick	135	31·7	3·1	0·4†	9,887	13,377
Whitby	142	8·4	15·9	13·4	9,597	13,660
Kendal	180	44·4	3·9	20·0	8,015	14,430
Wellington (Salop)	163	28·4	34·4	5·6†	7,531	12,276
Hereford	278	52·9	40·8	29·1	7,292	20,267
Newark	217	42·0	20·3	26·7	6,730	14,571
Mansfield	266	57·4	8·5	55·7	5,988	15,925
Boston	246	86·5	33·1	1·0†	5,926	14,570
Bromsgrove	221	46·0	25·7	20·2	5,898	13,006
Whitefield (Lancs.)	250	90·2	11·8	17·6	5,786	14,472
Warwick	212	62·3	16·0	12·6	5,607	11,903
Carmarthen	186	79·4	0·4	3·5	5,548	10,338
Beverley	232	37·6	29·9	29·9	5,401	12,539

* In the order of population in 1801.

† Decrease.

	Increase, 1801–91, as from 100 to	Increase per Cent.			Population.	
		1801–31.	1831–61.	1861–91.	1801.	1891.
In the South and East.						
Norwich	274	65·8	22·5	34·8	36,854	100,970
Bath	156	53·0	3·4	1·3*	33,196	51,844
Exeter	232	66·2	21·3	14·8	19,734	45,813
Yarmouth	296	47·9	42·1	41·0	16,761	49,629
Canterbury	198	42·7	28·9	7·8	11,699	23,207
Lynn	182	32·4	20·9	13·5	10,096	18,360
Salisbury	197	32·9	6·7	38·8	8,952	17,621
Frome	130	39·8	8·5*	1·4	8,840	11,464
Truro	196	86·8	22·3	14·3*	7,657	14,978
Bury St. Edmunds	217	49·4	16·5	24·9	7,655	16,630
Newbury	195	51·2	5·7	21·8	6,655	12,957
Tiverton	167	50·1	7·0	4·3	6,505	10,892
Newport (I. of Wight)	205	48·1	28·9	7·4	5,938	12,173
Poole	266	41·6	18·8	58·2	5,801	15,348
Trowbridge	205	87·3	3·5*	13·5	5,799	11,901
Sheerness	290	43·6	100·0	0·9	5,561	16,111
Stroud	213	58·7	5·6	26·7	5,422	11,519
Deal	164	34·1	3·6	18·1	5,420	8,891

* Decrease.

Of these 35 places, 29 increased most rapidly in the first period of thirty years, when the agricultural districts were increasing in population. Only two places showed a fair rate of increase in 1861-91, namely, Mansfield and Poole.

The towns which in 1891 had attained a population of 20,000 persons, and which are not in any of the above lists, are shown in Appendix C.

In Appendix D I have set out a comparative view of the population and area occupied by each of the classes of towns, of populous and of rural districts, at each successive census, in England and Wales.

In Appendix E are shown the rates per cent. of increase or decrease *in each of the thirteen divisions* of each of these classes of population, fourteen in number.

As the relative importance of the classes varies exceedingly, it has to be shown *how the population in each division is constituted*, and this is done in Appendix F.

With the help of these tables, a few concluding observations concerning town populations may be made.

Towns classed as having at least 4,000 *inhabitants in* 1801. These were of least importance in the Welsh division; in fact, the largest town in Wales itself, in 1801, was Swansea, with about 6,812 inhabitants. The Northampton district ranked next, and then the Norfolk and Cumberland divisions. The proportions belonging to the "unprogressive" class were in many cases insignificant, but in Norfolk, Cumberland, Gloucester, Wilts, and the Welsh division they were noticeable.

Towns of less magnitude in 1801.—These were relatively insignificant in the metropolitan circle, and the Norfolk and Cumberland divisions ranked next. In the two last-named divisions, and in that of Gloucester, Devon, &c., "unprogressive" towns preponderated, but elsewhere they did not exceed one-third of the whole.

It is well to bear in mind that the "natural" increase by excess of births over deaths is such that in ninety years 100 persons would increase to more than 300 (on an average of experience), so that the "unprogressive" places must generally have sustained losses by migration. An increase of 200 per cent. in ninety years is about equal to 45 per cent. in thirty years, or 13 per cent. in ten years. On reference to Appendix E it will be seen that in the period 1801-31 there were, out of 36 ratios of increase in "unprogressive" towns, 17 as high as 45 per cent., but in the following sixty years, out of 72 similar ratios, one only exceeding 45 per cent. This indicates a tremendous and universal check after 1831, doubtless brought about by similar causes to those which have in the same period depressed agricultural populations. If we look at the decennial tables for the thirty years 1861-91, we find, out of 108 ratios, only two exceeding 13 per cent., and 16 showing actual decrease.

Again consulting the decennial ratios, we find, that whilst agricultural population showed an unusually high rate of increase in 1811-21, the same is true of "unprogressive" towns, the ratio being 13 per cent. or more in 30 out of 36 cases, but in 1821-31 only equally high in 13 out of the same number of cases. There was something like a rally in the rates of increase of the larger northern "unprogressive" towns in 1841-51, and for this and similar phenomena the appendices may be consulted.

As to the "progressive" towns, 1811-41 was the period of most rapid growth for the larger ones, and 1811-31 for those next in order (with 2,000—4,000 inhabitants in 1801), but 1851-81 was a time of rapid growth for very small or altogether new towns, and 1881-91 saw a strikingly reduced growth in each class. In the last three decennial periods, out of 47 ratios relating to progressive towns—

29 were over 20 per cent. in 1861-71				
32	,,	,,	,,	'71-81
20	,,	,,	,,	'81-91

In the final decennium the number of ratios below 13 per cent. was 13, or somewhat above one-fourth of the whole of these towns had ceased to receive a balance of immigrants in excess of emigrants.

Populous Districts.

Besides the areas, 346,796 acres in extent, which might be called populous in 1801, other areas, aggregating 573,337 acres, were even then much better peopled than the rural districts generally, and are now ranked as new populous districts "unprogressive." Excluding these, the districts which had only reached in 1801 an average density of 0·2 per acre, and which in 1891 had risen to a density of 1·46 per acre, cover 1,513,686 acres.

The "unprogressive" populous districts only attained moderate importance at the best; they contained the following percentages of total population in 1891, in the divisions where they figured most prominently:—

	Per Cent.
Gloucester, Devon, &c.	5·3
West Riding	5·1
Lincoln, Notts, &c.	4·5
Northampton, &c.	3·1
Norfolk, &c.	2·6

Like the "unprogressive" towns, they showed a comparatively high rate of increase in 1801-31, and a low one in the following sixty years, and their highest rates of increase were in 1811-21, when out of 23 ratios, 16 were at and above 13 per cent. increase. In the latest decennium, 1881-91, there were only 3 ratios exceeding that rate.

The "progressive" populous districts are much more interesting. The older ones showed a similar tendency to a high rate of increase in 1811-21, but again in 1871-81 many of them grew rapidly. There was a decided check in 1881-91, save in the two divisions of Durham and Lincoln, Notts, &c., where the most striking instances of increase were respectively Wallsend (from 13,737 to 20,113), Greasley (Notts), from 8,867 to 11,143, and Wigston Magna (Leicester), from 4,299 to 7,013. The first two districts have been principally influenced by extensions of industrial employments, including coal mining, the last probably by railway works.

The new populous districts of a progressive character bulk most largely in the divisions Durham, &c., and Wales, &c., and they comprehend very many colliery districts. Many of them are densely enough peopled to justify the idea that they contain towns, as the following table will show:—

Division.	Density 2 per Acre upwards.				Lower Densities.			
	Area.	Population.		Density per Acre.	Area.	Population.		Density per Acre.
		1801.	1891.			1801.	1891.	
	Acres.				Acres.			
Durham, &c.	69,757	13,710	222,732	3·19	143,619	19,523	172,034	1·20
Wales, Salop, &c.	58,217	7,031	167,402	2·88	240,104	28,690	235,185	0·98
Lincoln, Notts, &c.	27,218	10,346	90,139	3·31	87,869	20,373	104,912	1·19
West Riding	29,899	9,886	91,351	3·06	94,915	24,044	112,122	1·18
Lancashire and Cheshire	23,341	9,915	71,755	3·07	127,613	30,027	152,305	1·19
Metropolitan circle	17,279	4,749	68,231	3·95	168,460	34,667	177,236	1·05
Stafford, &c.	23,518	7,295	65,608	2·79	90,111	17,026	82,782	0·92
North and East Ridings	8,560	1,823	36,478	4·26	31,148	6,258	34,900	1·12
Wilts, Hants, &c.	10,633	2,364	29,177	2·74	56,595	9,512	52,143	0·92
Gloucester, &c.	7,305	3,712	26,508	3·63	83,231	17,760	96,065	1·15
Cumberland, &c.	3,943	833	13,935	3·53	43,305	5,578	37,288	0·86
Northampton, &c.	1,957	874	5,513	2·82	33,071	7,390	32,702	0·99
Norfolk, &c.	871	676	2,197	2·52	31,147	6,742	27,745	0·89
	282,498	73,214	891,026	—	1,231,188	227,590	1,317,419	—

It is indeed supposed that these districts, even those least densely peopled, do include towns, in an unknown number of cases, and one of the most interesting results of a carefully conducted census would be to inform us more clearly on this subject. What we can, however, readily discern is that in the five divisions ranked highest in the last table, the most populous districts are within the areas of coalfields. There are no coalfields in the metropolitan circle, and some of the densely peopled districts within its limits include the camp at Aldershot, also Shorncliffe and South Shoebury. The Stafford division, besides various mining and industrial districts, includes Yardley and Northfield, near Birmingham, places apparently of a residential character. The North Riding is, like Cumberland, chiefly affected in the iron-making districts. In the Wilts division there are several populous places near towns, especially near Brighton, Southampton, and Hastings. In the Gloucester division I find Portland, some mining districts in Somerset, and Twerton, near Bath. In the Northampton division, some railway works affect districts near Bletchley, and in the Norfolk division, the small town of Cromer is most noticeable.

A few examples of high densities in mining and industrial districts are shown below, together with instances where, although the average density is little more than 2 persons per acre, the mass of population is great:—

Registration District.	Parish.	Area.	Population.			Density per Acre.
			1801.	1851.	1891.	
Durham, &c.		Acres.				
Auckland	Shildon	598	101	2,144	7,870	13·16
Houghton-le-Spring	Hetton-le-Hole	1,618	212	5,664	12,726	7·87
Tynemouth	Cowpen	1,738	853	4,045	12,982	7·47
Sunderland	Tunstall	808	53	70	4,503	5·57
	Ryhope	1,585	254	475	7,541	4·76
Auckland	Coundon Grange	669	25	585	3,187	4·76
	Coundon	794	163	1,073	3,635	4·58
	Crook and Billy Row	4 058	193	2,764	11,430	2·82
Durham	Brandon and Byshottles	6,683	522	525	14,239	2·13
Morpeth	Bedlington	8,470	1,422	5,101	16,996	2·01
Wales, Salop, &c.						
Neath	Michaelstone Lower	1,019	137	5,421	5,280	5·18
	Aberavon	1,331	275	2,380	6,086	4·57
Wrexham	Broughton	1,242	762	2,002	5,030	4·05
Pontypool	Trevethin-with-Pontypool	11,060	1,472	16,864	22,653	2·05
Pontypridd	Ystradyfodwg	19,441	342	951	68,721	3·53
	Llanwonno	13,109	426	3,253	30,712	2·34
Lincoln, Notts, &c.						
Basford	Heanor	1,579	1,061	3,427	9,779	6·19
Chesterfield	Whittington	1,581	663	874	8,798	5·56
	Claylane or Claycross	1,326	353	2,278	7,143	5·39
Basford	Eastwood	951	735	1,720	4,363	4·59
	Hucknall Torkard	3,281	1,497	2,970	13,094	3·99
West Riding.						
Barnsley	Nether Hoyland	2,085	823	2,912	11,006	5·28
Rotherham	Rawmarsh	2,578	1,011	2,533	11,983	4·65
Pontefract	Whitwood	1,082	233	576	4,806	4·44
Barnsley	Wombwell	3,851	614	1,627	10,942	2·84
Lancashire, &c.						
Bolton	Great Lever	867	398	713	5,400	6·23
Wigan	Aspull	1,905	1,253	3,278	8,952	4·70
Wirral	Whitby	1,232	170	909	5,107	4·14
Barton-upon-Irwell	Urmston	993	532	730	4,042	4·07
Stafford, &c.						
Burton-on-Trent	Church Gresley	1,240	215	1,257	6,309	5·09
Stourbridge	Wollaston	476	366	1,229	2,333	4·90
Burton-on-Trent	Swadlincote	642	216	1,007	2,945	4·59
Wolverhampton	Wednesfield	3,688	1,088	4,858	12,024	3·26
Solihull	Yardley	7,590	1,906	2,753	17,141	2·26
N. and E. Ridings.						
Guisborough	Skinningrove	188	67	114	1,666	8·86
Middlesbro'	Normanby	1,462	99	195	9,128	6·24
	Eston	2,252	288	465	10,695	4·75
	Ormesby	2,883	357	446	8,757	3·04
Cumberland, &c.						
Cockermouth	Ellenboro', &c.	996	471	969	4,471	4·49
Whitehaven	Cleator	2,947	362	1,779	9,464	3·21

The importance of these newly-peopled districts, and their comparative obscurity, must excuse the space I have occupied in imperfectly describing them. Their collective increase was most important in the thirty years 1851-81, but in Durham and in Wales the impulse came thirty years earlier. In the final period, 1881-91, there was a check as considerable as that which occurred in 1841-51 (namely, to about two-thirds the rate experienced in the preceding decennium), but even then all the divisions, save Cumberland, Durham, and North York, must have gained upon a balance of migrations.

Rural Districts.

The chief lesson to be learnt from a study of the local movements of population in the rural districts is the uniformity which pervaded them. In those districts, about one-ninth of the whole rural area, which have been distinguished as having increased at least 15 per cent. in population in the fifty years 1841-91, there has practically been continuous increase, five cases to the contrary out of 117 being negligeable. But the only decennial period in which the natural increase was retained was 1811-21. Since then, out of 91 ratios, eight only reached 13 per cent., so that in 83 cases a loss by migration was sustained.

Excluding these, it will be seen that in every division there has latterly been absolute decrease, even greater in the sparsely peopled parts[4] than in the rest, during 1871-91. In 1811-21 the rates of increase correspond pretty nearly with the natural increment, though, having regard to the augmented marriage and birth-rates after Waterloo, it is possible that in most cases a balance of emigrants departed. Since 1821 these districts have first augmented their average emigration so as to absorb in 1821-41 fully half their natural increase, and after 1841 have parted with practically the whole of it, with in general a further quota. In Staffordshire, Lancashire, and West Yorkshire divisions, the neighbourhood of thriving towns and industrial districts has promoted the tendency to emigration from rural parishes earlier than elsewhere.

Reverting to the rural districts classed as comparatively progressive, it may here be noted that in 1881-91:—

	Acres.	1891. Population.
Those showing 20 per cent. increase aggregated	612,348	166,425
,, a less progressive state	2,832,863	772,507
	3,445,211	938,932

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[4] The conversion of arable land into permanent pasture cannot have affected these districts much; but their inhabitants may have been attracted to the mines.

Consequently there was not a near prospect of the transfer of any very extensive area from this class to that of new "populous "districts."

The Appendix F shows in a summary table what proportion of the population in 1891 of ordinary rural districts was found in those distinguished as being slightly progressive since 1841. On the whole this proportion is 938,932 out of 4,791,643 or 19·6 per cent., but it will be seen that in the Northampton, Norfolk, and Gloucester divisions the ratios range from 2·8 to 6·5 per cent. only. The large proportion of such slightly progressive districts in the metropolitan circle is perhaps the most noticeable fact further disclosed, for in Durham the rural districts not sparsely peopled are of small extent.

General Remarks.

The inquiry embodied in this paper has, I think, brought out clearly—

(*a*.) The vast change in the territorial distribution, the amount, and the industrial means of support of our population since 1801.

(*b*.) The moderate extent of country which has been affected by the immense developments of the ninety years 1801-91.

It has prepared the way for a closer study of the results as to numbers of the census of 1901 than could otherwise have been attempted.

Incidentally, every town which had 20,000 inhabitants in 1891 has been noticed, and its progress indicated. The desirability of information as to the occupations of the people in the limited areas occupied by the towns and the populous districts becomes more evident, as it is obvious that the sources of our prosperity and the indications of our industrial vicissitudes are to be found there. And without disparaging the value of a census in relation to actuarial inquiries and municipal work, I think its most important purpose is that of showing the strength of the nation, and the degrees in which its various industries are thriving or declining.

APPENDIX.

A.—*Details as to the Composition of the Thirteen Divisions adopted in this Paper.*

Eight Divisions in the North and West.

Cumberland, &c.	Cumberland and Westmorland.
Durham, &c.	Durham and Northumberland.
North and East Ridings	North and East Ridings (York).
West Riding	West Riding (York).
Lancashire and Cheshire	Lancashire and Cheshire.
Lincoln, Notts, &c.	Lincoln, Rutland, Leicester, Notts, and Derby.
Stafford, Warwick, &c.	Stafford, Warwick, and Worcester.
Wales, Salop, &c.	North and South Wales. Salop, Hereford, and Monmouth.

Five Divisions in the South and East.

Gloucester, Devon, &c.	Gloucester, Somerset, Dorset, Devon, and Cornwall.
Wilts, Hants, &c.	Wilts, Hants (except the registration district of Hartley Wintney); also Newbury, Hungerford, Faringdon, Abingdon, Wantage, Wallingford, Bradfield, and Reading (in Berks); Westbourne, Midhurst, Chichester, West Hampnett, East Preston, Thakeham, Petworth, Steyning, Brighton, Lewes, Hailsham, Eastbourne, Battle, Hastings, and Rye (in Sussex).
Metropolitan circle	London, Middlesex, Surrey, Kent, Essex, and Hertford; adding Biggleswade, Ampthill, Woburn, Leighton Buzzard, and Luton (in Bedford); Aylesbury, Wycombe, Amersham, and Eton (in Bucks); Henley and Thame (in Oxford); Wokingham, Cookham, Easthampstead, and Windsor (in Berks); Hartley Wintney (in Hants); Horsham, Cuckfield, East Grinstead, Uckfield, and Ticehurst (in Sussex).
Northampton, &c.	Northampton and Huntingdon; adding Bedford (in Bedfordshire); Newport Pagnell, Winslow, and Buckingham (in Bucks); Headington, Oxford, Bicester, Woodstock, Witney, Chipping Norton, and Banbury (in Oxfordshire).
Norfolk, &c.	Norfolk, Suffolk, and Cambridge.

Note.—In every case the counties mentioned are registration counties, and the districts are registration districts, as constituted in 1891, there having been various re-arrangements of districts since 1851, all which, save small alterations in parish boundaries, have been given effect to in the tables.

B.—*Decennial Progress in National Subdivisions.*

	Increase per Cent. in Decennium ending								
	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Progressive.									
London	18·9	20·8	19·6	17·6	20·6	20·4	20·6	22·9	18·1
,, belt around	15·3	16·7	12·9	11·5	6·1	13·9	21·6	16·4	23·2
70 towns 4,000 and upwards*	21·2	26·0	32·1	26·6	21·3	20·2	18·6	19·8	14·4
71 ,, 2,000 to 4,000*	22·9	26·2	25·1	22·7	18·2	19·1	17·1	19·9	13·9
76 ,, 1,000 ,, 2,000*	23·4	26·8	23·7	20·7	23·1	28·3	28·2	28·2	22·5
69 new towns	29·5	28·0	33·5	46·9	30·0	40·4	37·7	35·2	26·7
Populous in 1801	17·5	25·1	15·6	17·2	13·7	17·8	17·8	21·7	13·3
,, (new)	19·3	21·4	21·2	27·7	18·8	31·4	30·4	32·2	21·8
Unprogressive.									
42 towns 4,000 and upwards*	10·1	21·2	11·3	6·3	7·9	3·1	4·4	6·0	3·3
99 ,, 2,000 to 4,000*	12·4	16·3	14·0	7·3	7·1	2·8	2·2	4·6	3·4
147 ,, 1,000 ,, 2,000*	10·2	16·7	10·9	8·4	3·7	0·4	5·1	4·5	2·3
Populous in 1801	14·3	15·6	11·0	9·5	4·4	1·2	2·6	2·1	4·4
,, (new)	13·0	16·1	11·9	8·5	4·9	3·2	5·0	6·1	6·2
Rural (*a*) sparse	8·4	12·2	5·2	3·4	0·8	1·3†	1·1†	5·4†	7·3†
,, (*b*) growing....................	10·0	15·3	8·0	9·9	7·1	5·6	9·5	6·7	7·1
,, (*c*) the rest....................	7·7	14·9	7·6	6·2	1·9	2·4†	1·2†	4·7†	3·5†

* In 1801. † Decrease per cent.

C.—*List of Towns having in* 1891 *at least* 20,000 *Inhabitants, outside the categories mentioned in the Paper. In the order of their (Corrected) Populations in* 1891.

	Increase, 1801-91, as from 100 to	Increase per Cent.			Population.*	
		1801-31.	1831-61.	1861-91.	1801.	1891.
In the North and West.						
Huddersfield	591	127·5	75·2	48·3	16,147	95,420
Stockport	396	110·7	30·2	44·2	21,429	84,766
Wolverhampton	658	96·8	146·1	35·8	12,565	82,662
Wigan	621	89·8	102·5	61·7	11,951	74,268
Rochdale	514	107·0	87·0	32·8	14,979	76,975
York	372	55·1	63·2	47·1	18,614	69,292
Coventry	331	70·3	52·6	27·3	16,034	53,004
Warrington	489	60·6	48·1	105·5	11,321	55,349
Bury (Lancs.)	586	109·1	101·5	39·0	9,152	53,627
Tynemouth	358	75·7	43·3	42·3	13,849	49,596
Dudley	453	128·0	95·2	1·7	10,107	45,740
Lincoln	577	55·9	86·1	98·7	7,197	41,491
Carlisle	397	94·3	53·6	33·0	10,594	42,035
Macclesfield	348	184·1	22·4	0·2	11,455	39,899
Wakefield	334	51·4	42·3	55·1	12,001	40,077
Rotherham	618	26·8	137·1	105·6	6,579	40,663
Barnsley	982	186·5	73·2	98·0	3,606	35,427
Scarborough	505	31·0	109·8	83·8	6,688	33,776
Lancaster	301	35·5	13·7	97·4	10,308	31,038
Keighley	630	94·5	68·4	92·2	5,745	36,176
Darwen	883	94·4	136·5	92·7	3,587	31,680
Hyde	908	394·0	43·9	27·7	3,490	31,682
Dewsbury	654	81·2	119·4	64·5	4,566	29,847
Tipton	685	249·3	93·1	1·5	4,280	29,314
Rowley Regis	613	48·0	166·0	55·6	5,027	30,791
Doncaster	455	89·6	51·9	58·1	5,697	25,933
Kidderminster	373	145·2	6·7†	63·2	6,110	22,818
Wednesbury	609	102·8	160·4	15·4	4,160	25,347
Leigh (Lancs.)	555	74·6	77·2	79·4	5,173	28,708
Workington	416	12·2	0·8	267·2	5,716	23,749
Bilston	339	109·6	68·1	3·7†	6,914	23,453
Shipley (Saltaire)	692	66·6	121·4	87·7	4,406	30,505
Chorley	511	105·5	61·7	53·8	4,516	23,087
Glossop	812	161·1	142·2	28·4	3,025	24,557
Chesterfield	309	47·7	53·8	36·2	6,975	21,581
Heywood	404	117·5	62·6	14·4	5,649	22,849
Oldbury	667	70·5	202·0	29·5	3,050	20,343
Stafford	480	86·7	72·4	49·2	4,461	21,423
In the South and East.						
Chatham	367	53·1	60·5	49·3	22,629	83,059
Reading	615	64·2	61·3	132·1	9,770	60,054
Ipswich	504	81·1	84·5	50·7	11,336	57,081
Oxford	369	81·2	27·4	59·8	12,841	47,358
Cambridge	411	104·0	32·8	51·7	10,828	44,509
Gloucester	463	77·3	71·5	52·4	8,681	40,227
Dover	423	95·0	65·7	31·0	8,015	33,918
Maidstone	400	96·7	45·8	39·7	8,027	32,145
Colchester	300	40·3	47·3	45·1	11,520	34,559
Bedford	710	76·3	92·7	108·9	3,948	28,023
Tunbridge Wells	791	117·4	89·0	92·5	5,989	47,348
Peterborough	637	59·5	94·9	104·7	4,352	27,701
Ramsgate	602	139·6	51·4	66·0	4,178	25,150
Gravesend	526	108·1	98·9	27·1	4,539	23,876
Folkestone	645	16·0	125·3	147·0	3,704	23,905
Lowestoft	930	83·8	131·2	118·9	2,509	23,339

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* Uncorrected population, or that of the whole district or districts representing the town.

† Decrease per cent.

D.—*Area and Population of the several Classes of Districts, Urban, Populous, and Rural.*

	Area.	POPULATION.									
		1801.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Towns.	Acres.										
London	243,561	1,060,149	1,260,403	1,522.683*	1,820,559	2,141,539*	2,582,597	3,110,032	3,749.937	4,609,901	5,442.249
70 progressive ... } towns of 4,000 and	703,177	1,370,474	1,660,647	2,092 874	2,765,075	3,500,224	4,349,821	5,230.182	6,200,752	7,426,300	8,492,739
42 unprogressive } upwards in 1801 ...	199,447	358,012	394,265	478,016	531,927	565,195	609,781	628.616	656,468	696,000	719,099
71 progressive† .. } towns of 2,000 to 4,000	332,612	289,179	355,510	418,806	561,412	688,666	814 134	969,593	1,135,327	1,361,773	1,551,346
99 unprogressive } in 1801	450,927	347,609	390,554	454,264	517,658	555,299	594,842	611,681	625,310	653,963	676.049
76 progressive ... } towns of 1,000 to 2,000	347,536	171,220	211,237	267,940	331,516	400,061	492.653	632,299	810,550	1,039,477	1,273,149
147 unprogressive } in 1801	460,739	291,382	320,970	374,718	415,534	450,619	467.501	469,244	493,153	515,275	527,180
69 new towns‡	359,053	89,883	116,405	148,993	198,959	292,177	379,872	533,192	734,110	992,322	1,257,095
Totals	3,097,052	3,977,908	4,709,991	5,788,294	7,142,640	8,593,780	10,291,201	12,184,839	14,405,607	17,295,011	19.938,906
Belt of districts round London	209,918	54,666	63,018	73,519	83,033	92,612	98,269	111,919	136,049	158,405	195,196
Populous districts.											
Populous in 1801 { progressive	149,976	96,103	112,908	141,278	163.306	191,329	217,621	256,371	301,942	367,483	416,188
Populous in 1801 { unprogressive	196,820	131,490	150,288	173,707	192,781	210,822	220,274	222,996	228,807	233,684	243,991
Further areas now populous { progressive	1,513,686	300,804	358,791	435,450	527,568	673,813	799,998	1,051,419	1,370,569	1,812,966	2,208,445
Further areas now populous { unprogressive	573,337	228,493	258,163	299,712	335,315	363,685	381,377	393,509	413,024	438,409	465,399
Totals	2,433,819	756,890	880,150	1,050,147	1,218,970	1,439,649	1,619,270	1,924,295	2,314,342	2,852,542	3,334,023
Rural districts.											
Sparsely peopled in 1891	8,768,581	651,359	705,837	791,879	832,922	860,870	867,643	856,757	847,160	801,459	742,757
Others { growing since 1841	3,445,211	441,167	485,390	559,557	604,392	664,072	711,162	750,673	821,741	876,484	938,932
Others { almost stationary	19,363,304	3,010,546	3,243,390	3,725,856	4,009,292	4,258,149	4,340,064	4,237,741	4,187,367	3,990,538	3,852,711
Totals	31,577,096	4,103,072	4,434,617	5,077,292	5,446,606	5,783,091	5,918,869	5,845,171	5,856,268	5,668,481	5,534,400
Militia	—	—	76,480	10,984	5,548	—	—	—	—	—	—
On railroads and canals	—	—	—	—	—	5,016	—	—	—	—	—
Total population, England and Wales	37,317,885	8,892,536	10,164,256	12,000,236	13,896,797	15,914,148	17,927,609	20,066,224	22,712,266	25,974,439	29,002,525

* Including militia and police in London.

† Including a "new" town (Quarry Bank).

‡ Including an old town (under 2,000 inhabitants in 1801), viz., Christchurch.

E.—RATES OF INCREASE.* 1. *In Seventy Progressive Towns with Populations* 4,000 *and upwards in* 1801.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	403	65·5	41·0	72·8	14·9	19·5	20·6	9·8	17·1	9·7	10·5	27·5	22·5
Durham, &c.	591	66·7	93·8	83·0	10·7	24·8	20·7	27·1	22·2	24·8	25·3	19·4	22·3
North and East Ridings	539	65·1	77·7	83·6	19·0	17·6	17·9	20·3	26·3	16·9	22·8	28·9	16·0
West Riding	676	112·8	83·4	73·1	16·3	30·7	40·0	26·2	22·5	18·6	26·9	19·1	14·5
Lancashire and Cheshire	736	132·9	105·8	53·6	25·3	32·9	39·9	33·6	28·5	19·8	14·6	20·0	11·7
Lincoln, Notts, &c.	639	99·5	63·4	96·0	23·0	22·3	32·7	19·5	16·6	17·3	22·2	33·8	19·9
Stafford, &c.	629	98·3	101·7	57·3	22·3	23·8	30·9	29·0	24·6	25·5	18·6	18·0	12·4
Wales, Salop, &c.	816	136·0	120·7	56·7	30·5	39·1	30·0	42·2	30·3	19·1	16·4	14·0	18·1
Gloucester, Devon, &c.	406	76·9	55·5	47·6	23·4	15·6	24·1	14·8	16·9	15·9	15·1	14·2	12·3
Wilts, Hants, &c.	633	95·9	99·4	62·2	23·2	25·3	26·8	18·0	32·1	27·9	17·2	18·3	17·0
Metropolitan Circle	379	67·5	60·5	41·1	19·9	18·0	18·3	20·0	13·8	17·5	12·9	7·9	15·9
Northampton, &c.	560	90·7	61·1	82·5	14·4	25·4	32·9	22·3	15·0	14·5	23·1	24·2	19·4
Norfolk, &c.	388	73·2	52·0	47·6	19·3	16·2	24·9	17·9	19·0	8·3	16·7	15·9	9·2
England and Wales	620	101·8	89·2	62·4	21·2	26·0	32·1	26·6	24·3	20·2	18·6	19·8	14·4

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* In this series of tables, rates of *decrease* are shown in heavy type.

E *Contd.*—RATES OF INCREASE. 2. *In Forty-Two Unprogressive Towns with Populations* 4,000 *and upwards in* 1801.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.*	183	46·4	15·6	8·2	18·9	22·4	0·6	3·2	10·5	1·4	3·2	4·5	0·3
Durham, &c.	135	31·7	3·1	**0·4**	9·7	15·5	4·0	**2·5**	19·0	**11·0**	**0·5**	4·8	**4·4**
North and East Ridings	175	18·9	21·7	20·7	0·2	19·7	**0·8**	**1·5**	13·3	9·0	7·4	11·7	0·6
West Riding	—	—	—	—	—	—	—	—	—	—	—	—	—
Lancashire and Cheshire	272	42·2	46·6	30·3	7·9	23·4	6·8	6·5	15·9	18·6	14·4	10·2	3·3
Lincoln, Notts, &c.	212	51·5	25·5	11·4	16·0	16·2	12·4	11·7	12·8	**0·4**	1·9	7·4	1·7
Stafford, &c.	212	62·5	16·0	12·6	15·9	26·7	10·6	7·3	12·3	**3·7**	3·9	7·3	1·0
Wales, Salop, &c.*	194	38·6	27·8	9·3	11·9	12·5	10·2	8·2	6·5	10·9	5·5	6·2	**2·4**
Gloucester, Devon, &c.*	184	54·0	10·5	8·4	9·7	24·3	12·9	5·8	3·7	0·8	1·5	3·1	3·5
Wilts, Hants, &c.*	190	52·1	10·0	13·4	13·4	19·7	12·1	5·4	4·2	0·1	5·7	4·9	2·2
Metropolitan Circle	187	40·0	21·2	10·5	15·5	12·2	8·0	8·6	**1·5**	13·2	0·7	4·2	5·3
Northampton, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Norfolk, &c.*	245	57·1	22·0	27·9	2·5	30·0	17·9	6·7	13·2	1·0	6·7	8·7	10·3
England and Wales	201	48·6	18·2	14·4	10·1	21·2	11·3	6·3	7·9	3·1	4·4	6·0	3·3

* These divisions alone have a considerable proportion of "unprogressive" large towns.

E *Contd.*—RATES OF INCREASE. 3. *In Seventy-One Progressive Towns with Populations* 2,000 *to* 4,000 *in* 1801.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Durham, &c.	1,240	93·6	73·7	268·5	5·5	18·4	55·1	26·6	3·5	32·6	107·8	48·7	19·3
North and East Ridings	9,363	80·2	938·5	400·2	**10·8**	32·2	52·8	393·4	18·5	77·7	122·9	55·8	44·1
West Riding	521	94·3	65·9	61·8	19·4	34·2	21·2	22·6	21·7	11·2	22·1	20·8	9·7
Lancashire and Cheshire	594	96·5	78·7	69·1	25·4	26·8	23·7	22·7	18·3	23·1	11·7	26·3	19·9
Lincoln, Notts, &c.	490	101·9	33·5	82·0	17·5	29·8	32·4	5·9	17·2	7·5	13·3	34·1	19·8
Stafford, &c.	538	94·5	112·7	30·1	26·6	23·5	24·4	30·5	26·0	29·3	10·6	10·9	6·1
Wales, Salop, &c.	342	67·9	37·9	47·6	19·3	13·7	23·8	14·0	10·7	9·3	18·9	15·6	7·4
Gloucester, Devon, &c.	480	162·7	56·8	16·5	37·9	39·9	36·1	26·2	12·0	11·0	8·4	4·3	3·0
Wilts, Hants, &c.	862	114·4	89·2	112·7	17·2	30·4	40·3	14·7	33·0	24·0	27·9	35·6	22·6
Metropolitan Circle	414	66·9	43·5	72·8	18·7	18·1	19·1	17·8	8·8	12·0	23·4	20·9	15·8
Northampton, &c.	551	55·7	69·7	108·5	12·1	19·4	16·3	17·4	18·6	21·9	27·6	26·0	29·8
Norfolk, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
England and Wales	536	94·1	72·7	60·0	22·9	26·2	25·1	22·7	18·2	19·1	17·1	19·9	13·9

E *Contd.*—Rates of Increase. 4. *In Ninety-Nine Unprogressive Towns with Populations* 2,000 *to* 4,000 *in* 1801.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	222	62·4	20·1	13·8	11·8	25·5	15·8	10·3	9·0	**0·1**	2·0	8·7	2·7
Durham, &c.	168	40 5	9·4	9·5	8·0	12·4	15·8	**2·4**	10·2	1·8	**0·1**	6·4	3·0
North and East Ridings	200	47 7	14·6	18·3	16·2	14·6	11·0	3·9	8·0	2·1	6·6	10·4	0·5
West Riding	199	57·7	11·8	12·7	18·8	20·6	10·1	8·6	4·6	**1·6**	**0·4**	9·8	3·1
Lancashire and Cheshire	235	86·5	21·3	3·8	18·6	25·8	25·1	4·0	14·4	2·0	**3·7**	6·3	1·4
Lincoln, Notts, &c.	227	56·4	16·7	24·2	18·0	17·1	13·1	11·0	7·2	**1·9**	4·7	10·4	7·4
Stafford, &c.	206	51·8	14·9	18 0	9·4	19·5	16·1	4·2	8·1	2·0	0·3	10·5	6·4
Wales, Salop, &c.	150	43 5	18·4	**11·5**	8·6	14·0	15·8	5·0	3·1	9·4	1·2	**3·1**	**9·7**
Gloucester, Devon, &c.	177	45·0	17·6	3·9	12·8	12·3	14·4	9·5	6·2	1·1	2·0	**0·9**	2·7
Wilts, Hants, &c.	141	34·2	2·0	3 0	3·8	21·6	6·3	7·4	**2·5**	**2·6**	2·2	**0·8**	1·7
Metropolitan Circle	235	39·4	37·5	23·6	11·2	13·6	10·3	8·9	11·8	13·0	7 0	6·4	8·6
Northampton, &c.	151	37·7	12·7	**3·0**	10·3	10·8	12·7	11·5	**0·7**	1·8	**6·7**	**1·0**	**1·3**
Norfolk, &c.	189	51·0	14·4	9·3	16·1	11·3	16·9	7·9	6·8	**0·7**	3·5	1·3	4·3
England and Wales	194	48·9	18·2	10·5	12·4	16·3	14·0	7·3	7·1	2·8	2·2	4·6	3·4

E *Contd.*—RATES OF INCREASE. 5. *In Seventy-Six Progressive Towns with Populations* 1,000 *to* 2,000 *in* 1801.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.*	403	14·9	99·9	75·4	2·7	11·9	—	0·5	17·1	69·9	30·1	31·9	2·2
Durham, &c.	1,164	59·5	95·1	274·1	29·5	14·2	7·9	18·0	18·2	39·9	110·4	39·2	27·7
North and East Ridings	327	15·6	105·4	37·7	6·7	4·3	4·0	**16·7**	16·1	98·1	27·4	27·2	**15·0**
West Riding	554	81·4	73·0	76·5	19·5	23·0	23·4	18·0	17·8	24·4	31·3	23·2	9·1
Lancashire and Cheshire	680	114·2	64·9	92·4	25·6	33·5	27·7	17·9	14·1	22·5	20·8	29·5	22·9
Lincoln, Notts, &c.	776	100·3	71·5	125·8	31·4	22·5	24·5	13·8	28·4	17·3	33·8	39·4	21·0
Stafford, &c.	819	66·7	153·1	94·1	14·9	19·9	21·0	41·7	37·4	30·0	18·8	31·2	24·4
Wales, Salop, &c.	1,688	176·8	187·6	112·0	37·4	53·6	31·2	37·5	46·0	43·2	19·8	28·0	38·3
Gloucester, Devon, &c.	381	95·2	42·5	36·8	—	47·0	32·8	17·4	6·3	14·3	12·0	11·5	9·5
Wilts, Hants, &c.	1,777	65·2	95·4	450·4	52·3	1·9	6·5	9·2	13·1	58·2	71·5	104·7	56·8
Metropolitan Circle	549	70·0	79·3	80·0	20·6	18·0	19·5	18·2	20·3	26·1	28·4	19·9	17·0
Northampton, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Norfolk, &c.*	930	83·8	131·2	118·9	39·3	14·8	15·0	10·1	49·2	40·7	43·0	29·2	18·5
England and Wales	744	93·6	90·7	101·4	23·4	26·8	23·7	20·7	23·1	28·3	28·2	28·2	22·5

* In these divisions "progressive" towns of this class are few.

E *Contd.*—RATES OF INCREASE. 6. *In One Hundred and Forty-Seven Unprogressive Towns with Populations* 1,000 *to* 2,000 *in* 1810.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	193	39·2	15·2	20·2	13·6	13·3	8·2	3·1	4·0	7·5	6·0	2·9	10·3
Durham, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
North and East Ridings	139	35·9	8·6	**6·1**	7·2	19·1	6·4	8·3	2·0	**1·7**	**2·6**	2·9	**6·3**
West Riding	196	30·7	23·0	22·2	11·7	17·7	**0·6**	15·4	**1·1**	7·8	7·2	10·6	3·1
Lancashire and Cheshire	235	40·3	17·7	42·5	13·8	14·8	7·4	6·9	0·9	9·1	10·3	16·6	10·7
Lincoln, Notts, &c.	198	47·2	17·0	14·7	11·1	17·1	13·2	12·9	4·2	**0·5**	3·6	9·4	1·2
Stafford, &c.	186	47·3	14·9	10·1	17·3	14·7	9·5	7·5	5·0	1·8	3·8	6·0	—
Wales, Salop, &c.	190	64·7	13·1	1·8	16·1	22·9	15·3	8·2	5·4	**0·8**	4·3	3·9	**6·0**
Gloucester, Devon, &c.	163	40·2	4·4	11·4	8·6	17·2	10·2	5·5	—	**1·1**	5·4	1·9	3·8
Wilts, Hants, &c.	167	32·0	13·5	11·3	5·3	14·5	9·5	7·5	6·0	**0·4**	5·0	2·0	3·8
Metropolitan Circle	199	41·6	17·8	19·2	6·7	16·4	14·0	9·2	9·0	**1·0**	8·1	4·8	5·3
Northampton, &c.	157	35·3	11·0	4·3	8·7	14·8	8·4	11·3	**0·1**	**0·2**	2·5	—	1·8
Norfolk, &c.	177	44·3	13·0	8·4	9·9	14·5	14·7	6·5	6·2	**0·1**	4·1	1·0	3·1
England and Wales	181	42·6	12·9	12·3	10·2	16·7	10·9	8·4	3·7	0·4	5·1	4·5	2·3

E *Contd.*—RATES OF INCREASE. 7. *In Sixty-Nine New Towns (the Population was under* 1,000 *in* 1801).

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Durham, &c.	4,451	88·3	971·8	119·9	6·1	15·7	53·9	200·8	91·0	86·6	35·2	20·4	35·1
North and East Ridings	13,104	28·4	2,581·4	280·6	1·4	10·5	17·9	720·2	36·0	140·4	101·3	40·1	34·9
West Riding	1,056	97·8	86·1	186·8	20·0	23·2	33·7	19·8	11·1	39·8	51·6	50·2	26·0
Lancashire and Cheshire....	1,228	102·2	129·1	165·0	26·0	26·6	26·8	29·6	26·0	40·3	45·8	46·9	23·8
Lincoln, Notts, &c.................	897	115·1	134·0	76·2	17·6	32·9	37·5	46·8	28·5	24·1	15·6	25·3	21·6
Stafford, &c.	1,175	163·0	130·0	94·4	20·9	39·6	55·8	53·1	23·9	21·2	32·5	32·4	10·7
Wales, Salop, &c.	1,813	238·7	227·7	63·4	70·6	36·9	45·0	76·3	32·6	40·2	19·9	11·1	22·7
Gloucester, Devon, &c.	1,631	140·3	282·0	77·7	21·2	34·5	47·4	52·1	67·7	49·8	31·4	19·3	13·4
Wilts, Hants, &c.	1,395	108·8	100·9	232·5	37·8	26·6	19·6	33·4	23·7	21·7	46·4	53·3	48·1
Metropolitan Circle	913	48·2	125·0	173·7	18·5	3·3	21·1	36·1	31·5	25·7	23·5	46·7	51·0
Northampton, &c.	910	52·2	40·4	325·8	4·9	25·5	15·6	5·3	11·4	19·7	21·4	72·3	103·5
Norfolk, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
England and Wales	1,399	121·4	168·0	135·9	29·5	28·0	33·5	46·9	30·0	40·4	37·7	35·2	26·7

E *Contd.*—Rates of Increase. 8. *In certain Districts Populous in* 1801; *Progressive.*

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	403	55·3	35·8	91·3	31·1	5·1	12·7	18·6	17·3	**2·4**	13·0	72·4	**1·8**
Durham, &c.	499	62·3	52·4	101·8	9·3	22·3	21·4	10·4	17·3	17·7	29·8	25·6	23·8
North and East Ridings	—	—	—	—	—	—	—	—	—	—	—	—	—
West Riding	417	53·7	61·8	67·7	14·1	22·3	10·2	20·4	12·2	19·8	20·7	24·7	11·4
Lancashire and Cheshire	461	94·1	53·6	54·7	27·5	27·0	19·8	12·0	15·1	19·2	14·0	22·2	11·1
Lincoln, Notts, &c.	389	44·4	36·5	97·4	13·2	17·3	8·7	11·4	7·3	14·2	20·4	32·3	24·0
Stafford, &c.	426	62·5	84·0	42·6	10·8	20·3	21·9	42·0	19·1	8·8	9·4	22·2	6·6
Wales, Salop, &c.	405	82·1	73·9	27·9	8·9	41·7	18·0	30·6	7·0	24·4	10·2	8·2	7·2
Gloucester, Devon, &c.	313	108·0	34·1	12·1	34·2	33·8	15·9	17·8	10·2	3·3	2·9	0·5	8·3
Wilts, Hants, &c.	727	83·7	174·4	44·3	4·5	30·3	34·9	28·9	69·9	25·3	29·6	8·5	2·6
Metropolitan Circle	—	—	—	—	—	—	—	—	—	—	—	—	—
Northampton, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Norfolk, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
England and Wales	433	69·9	57·0	62·3	17·5	25·1	15·6	17·2	13·7	17·8	17·8	21·7	13·3

E *Contd.*—RATES OF INCREASE. 9. *In certain Districts Populous in* 1801 ; *Unprogressive.*

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Durham, &c.	227	24·1	19·2	53·8	11·2	5·5	5·7	**6·9**	16·6	9·8	11·3	23·8	11·7
North and East Ridings	—	—	—	—	—	—	—	—	—	—	—	—	—
West Riding	195	60·5	17·8	3·4	18·4	18·3	14·6	14·0	4·1	**1·1**	2·1	**1·7**	3·0
Lancashire and Cheshire	206	40·0	14·8	27·9	14·2	15·5	6·1	3·3	6·3	4·5	5·7	11·6	8·4
Lincoln, Notts, &c.	162	41·5	1·8	12·2	14·1	13·6	9·2	5·1	0·1	**3·2**	0·5	8·9	2·4
Stafford, &c.	229	29·6	44·2	22·6	2·5	12·7	12·1	10·8	13·0	15·2	1·0	7·0	13·5
Wales, Salop, &c.	183	54·4	12·7	5·4	18·8	20·5	7·9	7·5	3·2	1·6	1·0	1·0	3·4
Gloucester, Devon, &c.	148	46·1	13·4	**10·7**	11·5	15·6	13·3	12·0	2·0	**0·7**	**1·0**	**9·2**	**0·6**
Wilts, Hants, &c.	176	28·9	10·9	23·2	2·8	16·6	7·5	24·6	**15·1**	4·8	7·0	7·9	6·7
Metropolitan Circle	177	45·4	21·6	**0·1**	25·1	12·2	3·5	2·0	11·5	7·0	0·8	5·8	**6·3**
Northampton, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
Norfolk, &c.	93	—	6·5	**12·4**	0·4	5·8	**5·9**	15·0	4·5	**11·4**	**3·7**	**1·3**	**7·9**
England and Wales	186	46·6	15·7	9·4	14·3	15·6	11·0	9·5	4·4	1·2	2·6	2·1	4·4

E *Contd.*—Rates of Increase. 10. *In Districts which became Populous after* 1801; *Progressive.*

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	799	53·5	104·9	154·1	20·3	13·0	12·9	18·4	25·3	38·1	58·9	45·5	9·9
Durham, &c.	1,188	86·9	197·9	113·3	9·6	24·6	36·8	55·6	35·1	41·7	35·8	36·9	14·8
North and East Ridings	883	35·8	104·2	218·5	13·7	13·0	5·6	13·0	17·8	53·4	76·7	64·6	9 5
West Riding	600	65·1	66·6	118·0	17·1	20·3	17·2	20·4	10·3	25·3	29·3	38·1	22·1
Lancashire and Cheshire	561	68·6	60·2	107·6	22·8	19·3	15 1	19·5	11·1	20·7	31·4	28·3	23·1
Lincoln, Notts, &c.	633	66·0	73·2	120·8	20·3	18·9	16·1	18 9	13·8	28·1	28·9	41·9	20·7
Stafford, &c.	610	48·8	93·5	111·8	9·5	15·4	17·7	21·8	15·2	37·9	28·0	37·1	20·8
Wales, Salop, &c.	1,127	115·5	132·2	125·2	27·4	25·6	34·6	41·1	30·3	26·3	28·4	33·3	31·5
Gloucester, Devon, &c.	571	106·9	79·8	53·4	27·8	28·6	25·9	28·1	16·5	20·5	11·7	14·3	20·2
Wilts, Hants, &c.	685	81·3	73·7	117·5	26·4	23·8	15·8	20·8	15·8	21·2	37·1	27·7	21·2
Metropolitan Circle	623	65·2	96·2	92·1	20·3	19·3	15·1	19·1	7·5	53·2	28·8	18·3	26·1
Northampton, &c.	462	48·4	77·2	75·8	10·3	19·3	12·9	21·7	16·1	25·4	18·8	23·7	19·7
Norfolk, &c.	404	85·3	35·5	60·8	15·4	33·7	20·2	19·3	9·4	3·8	13·6	13·9	24·2
England and Wales	734	75·4	99·3	110·0	19·3	21·4	21·2	27·7	18·8	31·4	30·4	32·2	21·8

E *Contd.*—Rates of Increase. 11. *In Districts which became Populous after* 1801 ; *Unprogressive.*

Divisions.	Increase 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	223	38·6	**5·2**	70·0	20·3	15·4	**0·2**	9·8	3·6	**16·7**	16·4	25·5	16·3
Durham, &c.	189	15·7	17·2	39·2	5·9	1·1	8·0	5·8	8·5	2·1	4·5	15·6	15·2
North and East Ridings ...	157	31·1	17·0	**0·2**	10·5	9·8	10·5	4·7	**1·8**	13·7	2·7	1·0	**3·8**
West Riding	214	55·7	13·2	21·4	19·5	16·4	12·0	9·3	2·2	1·4	5·4	9·0	5·8
Lancashire and Cheshire ..	229	47·9	19·2	29·7	17·6	16·3	8·2	7·7	1·8	8 8	8·4	6·1	12·7
Lincoln, Notts, &c.	208	50·3	14·0	21·3	17·0	15·3	11·4	8·9	3·4	1·2	2·5	10·7	6·9
Stafford, &c.	236	44·9	21·6	33·8	11·8	16·3	11·5	6·7	10·5	3·2	8·1	16·8	5·9
Wales, Salop, &c.	210	36·9	28·9	19·0	2·6	21·7	6·9	10·5	7·8	8·2	5·2	13 7	**0·4**
Gloucester, Devon, &c.	174	60·0	11·5	**2·6**	13·5	19·9	17·6	8·2	1·2	1·9	0·1	**4·3**	1·6
Wilts, Hants, &c.	179	28·7	12·8	23·0	7·9	11·8	6·7	8·8	3·4	0·3	7 3	6·4	7·8
Metropolitan Circle	216	43·8	25·0	20·2	9·8	16 7	12 2	9·9	8·4	4·9	8·9	4·4	5·6
Northampton, &c.	213	45·4	29·0	13·5	11·4	15·0	13·5	13·7	15·4	**1·7**	0·4	3·1	9·7
Norfolk, &c.	188	41·9	16·3	13·8	8·7	13·3	15·3	2·5	9·1	3·7	3·6	7·2	2·5
England and Wales	204	46·7	17·4	18·3	13 0	16·1	11 9	8·5	4·9	3·2	5·0	6·1	6·2

E *Contd.*—RATES OF INCREASE. 12. *In Rural Districts Sparsely Peopled in* 1891.

Divisions.	Increase. 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	123	32·3	2·2	**8·9**	8·3	15·7	5·7	**0·5**	2·2	0·6	0·7	**6·2**	**3·6**
Durham, &c.	110	25·9	2·8	**15·4**	9·0	7·8	7·2	**1·3**	4·6	**0·4**	**2·2**	**7·4**	**6·6**
North and East Ridings	116	25·5	7·7	**14·1**	10·3	12·4	1·2	3·8	2·2	1·6	**1·8**	**4·6**	**8·3**
West Riding	104	23·5	**6·7**	**9·4**	7·6	10·0	4·3	2·4	**3·8**	**5·2**	4·1	**8·2**	**5·2**
Lancashire and Cheshire	100	28·3	**12·7**	**11·0**	12·3	15·8	**1·3**	**2·0**	**4·4**	**6·8**	**6·6**	0·2	**4·9**
Lincoln, Notts, &c.	138	37·1	19·0	**15·4**	9·1	15·1	9·1	10·1	5·5	2·4	**3·3**	**2·4**	**10·3**
Stafford, &c.	71	11·5	**15·6**	**24·9**	10·7	8·7	**7·3**	**2·7**	**6·6**	**7·2**	**3·5**	**12·8**	**10·8**
Wales, Salop, &c.	112	26·0	2·0	**12·5**	7·8	10·9	5·5	3·5	**0·5**	**1·1**	—	**4·3**	**8·6**
Gloucester, Devon, &c.	115	34·3	2·9	**16·9**	8·0	14·3	8·8	8·8	**0·9**	**4·6**	**3·5**	**7·7**	**6·7**
Wilts, Hants, &c.	122	31·0	4·8	**11·3**	3·1	17·1	8·4	5·1	3·1	**3·3**	**0·9**	**3·2**	**7·5**
Metropolitan Circle*	271	118·6	33·6	**7·1**	9·6	58·6	25·8	32·2	**0·6**	1·7	5·0	**4·3**	**7·5**
Northampton, &c.	117	27·7	12·4	**18·3**	4·3	18·9	3·0	9·8	4·9	**2·4**	**4·7**	**7·7**	**7·1**
Norfolk, &c.	—	—	—	—	—	—	—	—	—	—	—	—	—
England and Wales	114	27·9	2·9	**13·3**	8·4	12·2	5·2	3·4	0·8	**1·3**	**1·1**	**5·4**	**7·3**

* This area is so small that the rates of increase are unworthy of inclusion in a general view.

E *Contd.*—RATES OF INCREASE. 13. *Rural Districts (other), the Population of which has Increased 15 per Cent. since* 1841.

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	230	41·5	30·5	24·3	11·0	16·3	9·7	5·2	15·2	7·8	4·8	8·6	9·2
Durham, &c.	265	30·6	47·9	37·5	8·2	9·9	9·8	4·0	30·5	9·0	20·3	11·8	2·2
North and East Ridings	195	27·6	26·0	21·6	11·6	10·4	3·6	9·8	7·9	6·3	11·0	11·9	**2·1**
West Riding	225	33·9	29·0	30·0	8·8	16·2	6·0	10·8	4·8	11·1	15·2	4·1	8·4
Lancashire and Cheshire	194	32·9	14·7	27·0	8·8	15·8	5·5	6·5	2·6	5·0	10·7	7·4	6·9
Lincoln, Notts, &c.	191	26·1	18·4	27·8	9·1	11·0	4·1	7·3	5·2	4·9	6·4	8·6	10·7
Stafford, &c.	179	27·4	16·7	20·2	7·7	13·5	4·3	6·2	3·9	5·8	6·0	9·0	4·0
Wales, Salop, &c.	263	46·8	40·9	27·1	13·0	16·4	11·6	18·3	10·3	7·9	9·2	10·1	5·7
Gloucester, Devon, &c.	191	33·0	34·4	6·9	4·7	17·9	7·7	8·6	11·4	11·1	6·2	**3·4**	4·2
Wilts, Hants, &c.	203	38·5	18·3	23·8	10·8	15·0	8·6	11·2	3·0	3·3	9·8	3·5	8·9
Metropolitan Circle	209	38·9	18·5	26·7	10·1	16·3	8·4	8·6	4·2	4·7	9·8	5·6	9·2
Northampton, &c.	193	40·2	32·5	4·2	18·6	14·6	3·2	15·0	19·1	**3·3**	2·1	**3·6**	5·8
Norfolk, &c.	202	49·1	20·6	12·3	10·6	18·9	13·4	11·3	12·3	**4·0**	5·3	0·2	6·4
England and Wales	213	37·0	24·2	25·1	10·0	15·3	8·0	9·9	7·1	5·6	9·5	6·7	7·1

E *Contd.*—Rates of Increase. 14. *Rural Districts not included in the last two headings.*

Divisions.	Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending			Increase per Cent. in Ten Years ending								
		1831.	1861.	1891.	1811.	1821.	1831.	1841.	1851.	1861.	1871.	1881.	1891.
Cumberland, &c.	147	35·9	10·7	**6·4**	8·1	17·5	6·8	5·4	4·3	0·6	**4·9**	**0·1**	**1·5**
Durham, &c.	126	18·7	21·9	**14·7**	2·8	10·9	4·1	13·3	6·3	3·7	1·5	**11·3**	**5·3**
North and East Ridings ...	128	27·9	10·6	**9·4**	8·5	12·2	5·0	9·3	1·2	0·1	**3·7**	**2·3**	**3·7**
West Riding	129	32·5	2·0	**4·8**	9·4	14·9	5·4	4·6	**0·6**	**1·9**	**2·1**	1·0	**3·6**
Lancashire and Cheshire ...	121	32·4	**5·2**	**3·2**	12·3	13·9	3·5	1·7	**2·5**	**4·4**	**1·9**	**1·0**	**0·3**
Lincoln, Notts, &c.	136	35·2	12·7	**10·5**	8·9	15·8	7·2	9·5	5·0	**2·0**	**2·5**	**3·8**	**4·6**
Stafford, &c.	122	23·0	6·5	**6·8**	6·3	10·7	4·5	4·6	1·6	0·3	**0·8**	**3·4**	**2·8**
Wales, Salop, &c.	122	31·1	3·3	**9·7**	7·6	13·2	7·8	3·7	0·7	**1·1**	**1·8**	**3·2**	**5·0**
Gloucester, Devon, &c..... ...	120	35·6	2·9	**13·8**	8·2	15·0	9·0	6·7	**0·4**	**3·2**	**1·3**	**8·2**	**4·8**
Wilts, Hants, &c.	127	28·9	3·8	**4·7**	5·9	13·8	7·0	6·6	1·2	**3·8**	0·6	**3·7**	**1·6**
Metropolitan Circle	140	36·3	8·0	**4·7**	8·1	16·9	7·8	7·5	1·9	**1·4**	1·7	**4·5**	**1·9**
Northampton, &c.	124	32·2	9·4	**14·2**	6·4	15·4	7·7	5·4	4·0	**0·2**	**2·4**	**6·9**	**5·5**
Norfolk, &c.	133	37·4	6·0	**8·9**	6·8	17·1	9·9	5·8	5·2	**4·8**	**2·0**	**4·8**	**2·4**
England and Wales ...	128	33·2	5·7	**9·1**	7·7	14·9	7·6	6·2	1·9	**2·4**	**1·2**	**4·7**	**3·5**

F.—*Elements of Population in each Division.**

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Cumberland, &c.	Acres.						
Towns 4,000 and upwards in 1801—							
Progressive	14,568	16,310	65,784	403	65·5	41·0	72·8
Unprogressive	5,954	18,643	34,163	183	46·4	15·6	8·2
	20,522	34,953	99,947				
Towns 2,000 to 4,000 in 1801: progressive	—	—	—	—	—	—	—
Towns 1,000 to 2,000 in 1801: progressive	2,749	1,515	6,105	403	14·9	99·9	75·4
Towns: new	—	—	—	—	—	—	—
	2,749	1,515	6,105				
Towns 2,000 to 4,000 in 1801: unprogressive	17,875	12,606	27,987	222	62·4	20·1	13·8
Towns 1,000 to 2,000 in 1801: unprogressive	7,107	3,774	7,275	193	39·2	15·2	20·2
	24,982	16,380	35,262				
Populous in 1801—							
Progressive	52	360	1,452	403	55·3	35·8	91·3
Unprogressive	—	—	—		—	—	—
Further areas now populous—							
Progressive	47,248	6,411	51,223	799	53·5	104·9	154·1
Unprogressive	7,722	3,049	6,809	223	38·6	**5·2**	70·0
	55,022	9,820	59,484				
Rural: sparsely peopled	1,046,272	61,242	75,479	123	32·3	2·2	**8·9**
Other rural—							
Growing since 1841	111,871	9,411	21,607	230	41·5	30·5	24·3
Almost stationary	211,816	24,787	34,880	147	35·9	10·7	**6·4**
	1,369,959	95,440	131,966				
Totals	1,473,234	158,108	332,764				

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* Percentages of *decrease* are printed in heavy type in this series of tables.

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Durham, &c.	Acres.						
Towns 4,000 and upwards in 1801—							
Progressive	47,809	108,603	642,245	591	66·7	93·8	83·0
Unprogressive	6,507	9,887	13,377	135	31·7	3·1	**0·4**
	54,316	118,490	655,622				
Towns 2,000 to 4,000 in 1801: progressive	2,848	4,009	49,705	1,240	93·6	73·7	268·5
Towns 1,000 to 2,000 in 1801: progressive	10,637	6,441	74,974	1,164	59·5	95·1	274·1
Towns: new...................	8,356	1,661	73,926	4,451	88·8	971·8	119·9
	21,841	12,111	198,605				
Towns 2,000 to 4,000 in 1801: unprogressive	32,026	14,219	23,939	168	40·5	9·4	9·5
Towns 1,000 to 2,000 in 1801: unprogressive	—	—	—	—	—	—	—
	32,026	14,219	23,939				
Populous in 1801—							
Progressive	20,154	12,483	62,311	499	62·3	52·4	101·8
Unprogressive	20,364	10,607	24,119	227	24·1	19·2	53·8
Further areas now populous—							
Progressive	213,376	33,233	394,766	1,188	86·9	197·9	113·3
Unprogressive	11,284	6,865	12,950	189	15·7	17·2	39·2
	265,178	63,188	494,146				
Rural: sparsely peopled....	1,295,318	77,796	85,201	110	25·9	2·8	**15·4**
Other rural—							
Growing since 1841........	232,039	17,514	46,483	265	30·6	47·9	37·5
Almost stationary	153,826	20,895	26,403	126	18·7	24·9	**14·7**
	1,681,183	116,205	158,087				
Totals	2,054,544	324,213	1,530,399				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
North and East Ridings.	Acres.						
Towns 4,000 and upwards—							
Progressive	29,482	57,194	308,153	539	65·1	77·7	83·6
Unprogressive	8,035	14,998	26,199	175	18·9	21·7	20·7
	37,517	72,192	334,352				
Towns 2,000 to 4,000: progressive	1,997	167	15,637	9,363	80·2	938·5	400·2
Towns 1,000 to 2,000: progressive	7,014	1,719	5,623	327	15·6	105·4	37·7
Towns: new	6,542	581	76,135	13,104	28·4	2581·4	280·6
	15,553	2,467	97,395				
Towns 2,000 to 4,000: unprogressive	15,978	12,572	25,187	200	47·7	14·6	18·3
Towns 1,000 to 2,000: unprogressive	11,797	7,815	10,826	139	35·9	8·6	**6·1**
	27,775	20,387	36,013				
Populous in 1801—							
Progressive	—	—	—	—	—	—	—
Unprogressive	—	—	—	—	—	—	—
Further areas now populous—							
Progressive	39,708	8,081	71,378	883	35·8	104·2	218·5
Unprogressive	7,952	4,482	7,019	157	34·1	17·0	**0·2**
	47,660	12,563	78,397				
Rural: sparsely peopled	1,271,000	102,502	118,959	116	25·5	7·7	**14·1**
Other rural—							
Growing since 1841	106,546	10,463	20,448	195	27·6	26·0	21·6
Almost stationary	443,354	53,744	68,903	128	27·9	10·6	**9·4**
	1,820,900	166,709	208,310				
Totals	1,949,405	274,318	754,467				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
West Riding.	Acres.						
Towns 4,000 and upwards—							
Progressive	93,469	180,035	1,216,477	676	112·8	83·4	73·1
Unprogressive	—	—	—	—	—	—	—
	93,469	180,035	1,216,477				
Towns 2,000 to 4,000: progressive	50,652	39,692	206,934	521	94·3	65·9	61·8
Towns 1,000 to 2,000: progressive	33,808	32,721	181,153	554	81·4	73·0	76·5
Towns: new	31,563	11,245	118,699	1,056	97·8	86·1	186·8
	116,023	83,658	506,786				
Towns 2,000 to 4,000: unprogressive	29,914	25,154	49,982	199	57·7	11·8	12·7
Towns 1,000 to 2,000: unprogressive	19,826	13,652	26,821	196	30·7	23·0	22·2
	49,740	38,806	76,803				
Populous in 1801—							
Progressive	47,967	33,312	138,995	417	53·7	61·8	67·7
Unprogressive	65,635	42,309	82,665	195	60·5	17·8	3·4
Further areas now populous—							
Progressive	124,814	33,930	203,473	600	65·1	66·6	118·0
Unprogressive	56,687	20,263	43,372	214	55·7	13·2	21·4
	295,103	129,814	468,505				
Rural: sparsely peopled	504,715	40,463	42,258	104	23·5	**6·7**	**9·4**
Other rural—							
Growing since 1841	122,162	16,243	36,493	225	33·9	29·0	30·0
Almost stationary	594,086	90,972	117,093	129	32·5	2·0	**4·8**
	1,220,963	147,678	195,844				
Totals	1,775,298	579,991	2,464,415				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Lancashire and Cheshire.	Acres.						
Towns 4,000 and upwards—							
Progressive	173,702	374,276	2,756,470	736	132·9	105·8	53·6
Unprogressive	3,710	15,158	41,171	272	42·2	46·6	30·3
	177,412	389,434	2,797,641				
Towns 2,000 to 4,000: progressive	73,193	63,102	374,874	594	96·5	78·7	69·1
Towns 1,000 to 2,000: progressive	52,138	39,287	267,018	680	114·2	64·9	92·4
Towns: new	88,326	35,155	431,652	1,228	102·2	129·1	165·0
	213,657	137,544	1,073,544				
Towns 2,000 to 4,000: unprogressive	12,498	19,646	46,147	235	86·5	21·3	3·8
Towns 1,000 to 2,000: unprogressive	17,695	14,299	33,636	235	40·3	17·7	42·5
	30,193	33,945	79,783				
Populous in 1801—							
Progressive	30,150	24,025	110,826	461	94·1	53·6	54·7
Unprogressive	38,884	27,441	56,416	206	40·0	14·8	27·9
Further areas now populous—							
Progressive	150,954	39,942	224,060	561	68·6	60·2	107·6
Unprogressive	69,327	26,303	60,176	229	47·9	19.2	29·7
	289,315	117,711	451,478				
Rural: sparsely peopled	244,495	20,722	20,665	100	28·3	**12·7**	**11·0**
Other rural—							
Growing since 1841	266,504	43,617	84,471	194	32·9	14·7	27·0
Almost stationary	728,992	130,310	158,302	121	32·4	**5·2**	**3·2**
	1,239,991	194,649	263,438				
Totals	1,950,568	873,283	4,665,884				

F *Contd.— Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Lincoln, Notts, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	59,938	92,495	591,101	639	99·5	63·4	96·0
Unprogressive	14,303	27,115	57,432	212	51·5	25·5	11·4
	74,241	119,610	648,533				
Towns 2,000 to 4,000: progressive	13,128	11,283	55,338	490	101·9	33·5	82·0
Towns 1,000 to 2,000: progressive	42,774	13,751	106,690	776	100·3	71·5	125·8
Towns: new	28,748	5,736	50,865	887	115·1	134·0	76·2
	84,650	30,770	212,893				
Towns 2,000 to 4,000: unprogressive	33,216	23,948	54,262	227	56·4	16·7	24·2
Towns 1,000 to 2,000: unprogressive	39,927	24,630	48,660	198	47·2	17·0	14·7
	73,143	48,578	102,922				
Populous in 1801—							
Progressive	22,004	9,674	37,644	389	44·4	36·5	97·4
Unprogressive	10,669	6,231	10,070	162	41·5	1·8	12·2
Further areas now populous—							
Progressive	115,087	30,719	195,051	635	66·0	73·2	120·8
Unprogressive	77,425	34,086	70,817	208	50·3	14·0	21·3
	225,185	80,710	313,582				
Rural: sparsely peopled	247,590	20,100	27,736	138	37·1	19·0	**15·4**
Other rural—							
Growing since 1841	287,225	36,946	70,503	191	26·1	18·4	27·8
Almost stationary	2,503.984	315,643	430,246	136	35·2	12·7	**10·5**
	3,038,799	372,689	528,485				
Totals	3,496,018	652,357	1,806,415				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Stafford, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	124,661	200,187	1,258,896	629	98·3	101·7	57·3
Unprogressive	5,613	5,607	11,903	212	62·5	16·0	12·6
	130,274	205,794	1,270,799				
Towns 2,000 to 4,000: progressive	44,795	56,533	304,354	538	94·5	112·7	30·1
Towns 1,000 to 2,000: progressive	14,699	9,126	74,725	819	66·7	153·1	94·1
Towns: new........................	30,186	6,825	80,227	1,175	163·0	130·0	94·4
	89,680	72,484	459,306				
Towns 2,000 to 4,000: unprogressive	48,134	40,639	83,619	206	51·8	14·9	18·0
Towns 1,000 to 2,000: unprogressive	42,634	18,639	34,722	186	47·3	14·9	10·1
	90,768	59,278	118,341				
Populous in 1801—							
Progressive	1,610	2,400	10,233	426	62·5	84·0	42·6
Unprogressive	4,721	2,879	6,593	229	29·6	44·2	22·6
Further areas now populous—							
Progressive	113,629	24,321	148,390	610	48·8	93·5	111·8
Unprogressive	35,544	10,679	25,184	236	44·9	21·6	33·8
	155,504	40,279	190,405				
Rural: sparsely peopled ...	32,872	5,308	3,749	71	11·5	**15·6**	**24·9**
Other rural—							
Growing since 1841.........	204,582	32,773	58,614	179	27·4	16·7	20·2
Almost stationary	1,126,765	185,565	226,511	122	23·0	6·5	**6·8**
	1,364,219	223,646	288,874				
Totals	1,830,445	6[illegible]1,[illegible]81	2,327,720				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Wales, Salop, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	27,533	18,375	149,931	816	136·0	120·7	56·7
Unprogressive	34,273	46,279	89,620	194	38·6	27·8	9·3
	61,806	64,654	239,551				
Towns 2,000 to 4,000: progressive	14,881	15,412	52,665	342	67·9	37·9	47·6
Towns 1,000 to 2,000: progressive	44,662	14,833	250,372	1,688	176·8	187·6	112·0
Towns: new	99,653	10,711	194,238	1,813	238·7	227·7	63·4
	159,196	40,956	497,275				
Towns 2,000 to 4,000: unprogressive	42,694	28,846	43,385	150	43·5	18·4	**11·5**
Towns 1,000 to 2,000: unprogressive	51,958	31,490	59,718	190	64·7	13·1	1·8
	94,652	60,336	103,103				
Populous in 1801—							
Progressive	15,461	6,519	26,403	405	82·1	73·9	27·9
Unprogressive	1,376	3,517	6,453	183	54·4	12·7	5·4
Further areas now populous—							
Progressive	298,321	35,721	402,587	1,127	115·5	132·2	125·2
Unprogressive	22,660	9,335	19,617	210	36·9	28·9	19·0
	337,818	55,092	455,060				
Rural: sparsely peopled	2,899,611	215,495	242,203	112	26·0	2·0	**12·5**
Other rural—							
Growing since 1841	626,037	64,287	169,050	263	46·8	40·9	27·1
Almost stationary	2,426,565	358,282	438,274	122	31·1	3·3	**9·7**
	5,952,213	638,064	849,527				
Totals	6,605,685	859,102	2,144,516				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Gloucester, Devon, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	26,608	128,294	520,835	406	76·9	55·5	47·6
Unprogressive	59,114	97,108	179,110	184	54·0	10·5	8·4
	85,722	225,402	699,945				
Towns 2,000 to 4,000: progressive	32,770	27,598	132,419	480	162·7	56·8	16·5
Towns 1,000 to 2,000: progressive	18,905	7,249	27,590	381	95·2	42·5	36·8
Towns: new	10,904	3,352	54,686	1631	140·3	282·0	77·7
	62,579	38,199	214,695				
Towns 2,000 to 4,000: unprogressive	89,775	78,314	138,712	177	45·0	17·6	3·9
Towns 1,000 to 2,000: unprogressive	77,709	55,884	91,126	163	40·2	4·4	11·4
	167,484	134,198	229,838				
Populous in 1801—							
Progressive	12,000	6,026	18,841	313	108·0	34·1	12·1
Unprogressive	46,567	33,143	49,052	148	46·1	13·4	**10·7**
Further areas now populous—							
Progressive	90,536	21,472	122,573	571	106·9	79·8	53·4
Unprogressive	85,623	38,762	67,328	174	60·0	11·5	**2·6**
	234,726	99,403	257,794				
Rural: sparsely peopled	861,688	72,774	83,613	115	34·3	2·9	**16·9**
Other rural—							
Growing since 1841	110,499	16,482	31,484	191	33·0	34·4	6·9
Almost stationary	3,407,159	569,284	685,396	120	35·6	2·9	**13·8**
	4,379,346	658,540	800,493				
Totals	4,929,857	1,155,742	2,202,765				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Wilts, Hants, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	38,382	79,097	501,057	633	95·9	99·4	62·2
Unprogressive	35,994	46,783	88,671	190	52·1	10·0	13·4
	74,376	125,880	589,728				
Towns 2,000 to 4,000: progressive	12,351	8,535	73,653	862	114·4	89·2	112·7
Towns 1,000 to 2,000: progressive	9,076	2,015	35,799	1,777	65·2	95·4	450·4
Towns: new	40,297	8,981	125,255	1,395	108·8	100·9	232·5
	61,724	19,531	234,707				
Towns 2,000 to 4,000: unprogressive	34,046	23,672	33,360	141	34·2	2·0	3·0
Towns 1,000 to 2,000: unprogressive	38,261	28,373	47,324	167	32·0	13·5	11·3
	72,307	52,045	80,684				
Populous in 1801—							
Progressive	578	1,304	9,483	727	83·7	174·4	44·3
Unprogressive	6,663	2,745	4,834	176	28·9	10·9	23·2
Further areas now populous—							
Progressive	67,228	11,876	81,320	685	81·3	73·7	117·5
Unprogressive	34,639	13,595	24,269	179	28·7	12·8	23·0
	109,108	29,520	119,906				
Rural: sparsely peopled	244,498	23,578	28,718	122	31·0	4·8	**11·3**
Other rural—							
Growing since 1841	277,696	33,873	68,711	203	38·5	18·3	23·8
Almost stationary	2,036,958	315,469	401,942	127	28·9	3·8	**4·7**
	2,559,152	372,920	499,371				
Totals	2,876,667	599,896	1,524,396				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Metropolitan Circle.	Acres.						
London	243,561	1,060,149	5,442,249	513	71·7	70·8	75·0
Towns 4,000 and upwards—							
Progressive	33,996	54,730	207,557	379	67·5	60·5	41·1
Unprogressive	5,902	17,119	32,098	187	40·0	21·2	10·5
	283,459	1,131,998	5,681,904				
Towns 2,000 to 4,000: progressive	62,432	44,142	182,698	414	66·9	43·5	72·8
Towns 1,000 to 2,000: progressive	109,083	40,054	219,761	549	70·0	79·3	80·0
Towns: new	10,700	4,818	43,969	913	48·2	125·0	173·7
	182,215	89,014	446,428				
Towns 2,000 to 4,000: unprogressive	73,845	47,694	113,030	235	39·4	37·5	23·6
Towns 1,000 to 2,000: unprogressive	75,157	39,303	78,135	199	41·6	17·8	19·2
	149,002	86,997	191,165				
Populous in 1801—							
Progressive	—	—	—	—	—	—	—
Unprogressive	953	1,614	2,853	177	45·4	21·6	**0·1**
Further areas now populous—							
Progressive	185,739	39,416	245,467	623	65·2	96·2	92·1
Unprogressive	111,630	38,923	84,055	216	43·8	25·0	20·2
Belt round London	209,918	54,666	195,196	357	51·9	34·8	74·4
	508,240	134,619	527,571				
Rural: sparsely peopled	14,151	533	1,446	271	118·6	33·6	**7·1**
Other Rural—							
Growing since 1841	939,122	137,979	287,811	209	38·9	18·5	26·7
Almost stationary	2,029,142	352,784	495,073	140	36·3	8·0	**4·7**
	2,982,415	491,296	784,330				
Totals	4,105,331	1,933,924	7,631,398				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Northampton, &c.	Acres.						
Towns 4.000 and upwards—							
Progressive	13,793	21,953	123,014	560	90·7	61·1	82·5
Unprogressive	—	—	—	—	—	—	—
	13,793	21,953	123,014				
Towns 2,000 to 4,000: progressive	23,565	18,706	103,069	551	55·7	69·7	108·5
Towns 1,000 to 2,000: progressive	—	—	—	—	—	—	—
Towns: new	3,778	818	7,443	910	52·2	40·4	325·8
	27,343	19,524	110,512				
Towns 2,000 to 4.000: unprogressive	6,931	4,911	7,399	151	37·7	12·7	**3·0**
Towns 1,000 to 2,000: unprogressive	37,239	28,103	44,009	157	35·3	11·0	4·3
	44,170	33,014	51,408				
Populous in 1801—							
Progressive	—	—	—	—	—	—	—
Unprogressive	—	—	—	—	—	—	—
Further areas now populous—							
Progressive	35,028	8,264	38,215	462	48·4	77·2	75·8
Unprogressive	23,283	8,766	18,659	213	45·4	29·0	13·5
	58,311	17,030	56,874				
Rural: sparsely peopled	106,371	10,846	12,730	117	27·7	12·4	**18·3**
Other rural—							
Growing since 1841	31,890	3,637	7,037	193	40·2	32·5	4·2
Almost stationary	1,200,914	197,600	245,422	124	32·2	9·4	**14·2**
	1,339,175	212,083	265,189				
Totals	1,482,792	303,604	606,997				

F *Contd.—Elements of Population in each Division.*

	Area.	Population.		Increase, 1801-91, as from 100 to	Increase per Cent. in Thirty Years ending		
		1801.	1891.		1831.	1861.	1891.
Norfolk, &c.	Acres.						
Towns 4,000 and upwards—							
Progressive	19,236	38,925	151,219	388	73·2	52·0	47·6
Unprogressive	20,042	59,315	145,355	245	57·1	22·0	27·9
	39,278	98,240	296,574				
Towns 2,000 to 4,000: progressive	—	—	—	—	—	—	—
Towns 1,000 to 2,000: progressive	1,991	2,509	23,339	930	83·8	131·2	118·9
Towns: new	—	—	—	—	—	—	—
	1,991	2,509	23,339				
Towns 2,000 to 4,000: unprogressive	13,995	15,388	29,040	189	51·0	14·4	9·3
Towns 1,000 to 2,000: unprogressive	41,429	25,420	44,928	177	44·3	13·0	8·4
	55,424	40,808	73,968				
Populous in 1801—							
Progressive	—	—	—	—	—	—	—
Unprogressive	988	1,004	936	93	—	6·5	**12·4**
Further areas now populous—							
Progressive	32,018	7,418	29,942	404	85·3	35·5	60·8
Unprogressive	29,561	13,385	25,144	188	41·9	16·3	13·8
	62,567	21,807	56,022				
Rural: sparsely peopled	—	—	—	—	—	—	—
Other rural—							
Growing since 1841	129,038	17,942	36,220	202	49·1	20·6	12·3
Almost stationary	2,499,743	395,211	524,266	133	37·4	6·0	**8·9**
	2,628,781	413,153	560,486				
Totals	2,788,041	576,517	1,010,389				

Summary of Acreage.

	Towns 4,000 and upwards in 1801.	Smaller Towns.		Populous Districts.	Rural Districts.	Per Cent.*	
		Progressive.	Unprogressive.			Populous.	Rural.
Cumberland, &c.	20,522	2,749	24,982	55,022	1,369,959	3·7	93·0
Durham, &c.	54,316	21,841	32,026	265,178	1,681,183	12·9	81·8
North and East Ridings	37,517	15,553	27,775	47,660	1,820,900	2·4	93·4
West Riding	93,469	116,023	49,740	295,103	1,220,963	16·6	68·8
Lancashire and Cheshire	177,412	213,657	30,193	289,315	1,239,991	14·8	63·6
Lincoln, Notts, &c.	74,241	84,650	73,143	225,185	3,038,799	6·4	86·9
Stafford, &c.	130,274	89,680	90,768	155,504	1,364,219	8·5	74·5
Wales, Salop, &c.	61,806	159,196	94,652	337,818	5,952,213	5·1	90·1

* The balance of the area is that occupied by towns and their surroundings. As the smaller towns are frequently connected with surrounding country of much greater extent than the space which they occupy, the ratios representing such districts would grossly misrepresent the area occupied by towns. See Summary No. 2 in the early part of the Paper.

Summary of

	Towns 4,000 and upwards in 1801.		Towns (Smaller) and New Towns.		Populous Districts ‡	
	Progressive.	Unprogressive.	Progressive.	Unprogressive.	Progressive.	Unprogressive.
Cumberland, &c.	65,784	34,163	6,105	35,262	52,675	6,809
Durham, &c.	642,245	13,377	198,605	23,939	457,077	37,069
North and East Ridings	308,153	26,199	97,395	36,013	71,378	7,019
West Riding	1,216,477	—	506,786	76,803	342,468	126,037
Lancashire and Cheshire	2,756,470	41,171	1,073,544	79,783	334,886	116,592
Lincoln, Notts, &c.	591,101	57,432	212,893	102,922	232,695	80,887
Stafford, &c.	1,258,896	11,903	459,306	118,341	158,623	31,777
Wales, Salop, &c.	149,931†	89,620	497,275	103,103	428,990	26,070
Gloucester, Devon, &c.....	520,835	179,110	214,695	229,838	141,414	116,380
Wilts, Hants, &c.	501,057	88,671	234,707	80,684	90,803	29,103
Metropolitan Circle	5,649,806	32,098	446,428	191,165	440,663	86,908
Northampton, &c.	123,014	—	110,512	51,408	38,215	18,659
Norfolk, &c.	151,219	145,355	23,339	73,968	29,942	26,080
	13,934,988	719,099	4,081,590	1,203,229	2,819,829	709,390

* This column represents the proportion in 1891 of ordinary rural population found in ordinary rural population. † This figure is so small because Cardiff

‡ Including the "belt" round London.

Summary of Acreages—Contd.

	Towns 4,000 and upwards in 1801.	Smaller Towns.		Populous Districts.	Rural Districts.	Per Cent.*	
		Progressive.	Unprogressive.			Populous.	Rural.
Gloucester, Devon, &c.	85,722	62,579	167,484	234,726	4,379,346	4·8	88·8
Wilts, Hants, &c.	74,376	61,724	72,307	109,108	2,559,152	3·8	89·0
Metropolitan Circle	283,459	182,215	149,002	508,240†	2,982,415	12·4	72·6
Northampton, &c.	13,793	27,343	44,170	58,311	1,339,175	3·9	90·3
Norfolk, &c.	39,278	1,991	55,424	62,567	2,628,781	2·2	94·3

* See Note *, p. 588 *ante*.

† Including "belt" round London.

Population, 1891.

Rural Districts.	Percentage of Population found in							Percentage of Rural (not Sparse) Increased 15 per Cent. after 1841.*
	Progressive			Unprogressive				
	Towns 4,000 and upwards.	Smaller Towns.	Populous Districts.	Towns 4,000 and upwards.	Smaller Towns.	Populous Districts.	Rural Districts.	
131,966	19·8	1·8	15·8	10·3	10·6	2·0	39·7	38·3
158,087	42·0	13·0	29·9	0·9	1·6	2·4	10·3	63·8
208,310	40·8	12·9	9·5	3·5	4·8	0·9	27·6	22·9
195,844	49·4	20·6	13·9	—	3·1	5·1	7·9	23·8
263,438	59·1	23·0	7·2	0·9	1·7	2·5	5·6	34·8
528,485	32·7	11·8	12·8	3·2	5·7	4·5	29·3	14·1
288,874	54·1	19·7	6·8	0·5	5·1	1·4	12·4	20·6
849,527	7·0†	23·2	20·0	4·2	4·8	1·2	39·6	27·8
800,493	23·6	9·7	6·4	8·1	10·4	5·3	36·3	4·4
499,371	32·9	15·4	6·0	5·8	5·3	1·9	32·8	14·6
784,330	74·0	5·9	5·8‡	0·4	2·5	1·1	10·3	36·8
265,189	20·3	18·2	6·3	—	8·5	3·1	43·7	2·8
560,486	15·0	2·3	3·0	14·4	7·3	2·6	55·5	6·5
5,534,400								

districts where an increase not less than 15 per cent. had occurred since 1841 to the total
and other large places in the division had fewer than 4,000 inhabitants in 1801.

DISCUSSION *on* MR. WELTON'S PAPER.

THE PRESIDENT (The RIGHT HON. LORD AVEBURY, F.R.S.) said he was sure they had all listened with interest to Mr. Welton's elaborate paper, which contained a great number of statistics and closely-packed facts, some of which they could perhaps hardly follow during the reading of the paper, but which they would study with advantage. He had himself been struck with the number of districts which, under Mr. Welton's arrangement, were classified as unprogressive. This showed how great the concentration of population had been in particular parts of the country. The decrease of population in rural districts, which Mr. Welton had also very strikingly pointed out, was on many accounts much to be deplored. He had always thought that it was largely due to the fact that the real interest of country life was not sufficiently brought out in our system of education. If children in rural schools had pointed out to them the objects of interest with which they were surrounded, he thought that the interest so aroused would have a tendency to compensate for the attractions of town life. He did not know if Mr. Welton would agree with him that the diminution of rural population was really more than the statistics would seem to show, because there had been of late a very great tendency to increase the number of gentlemen's residences and villas, especially along the valleys of our great rivers and in the other more beautiful parts of England, and that had naturally brought with it a great increase of gardeners, carpenters, plumbers, bricklayers, and men of other occupations in life which are connected more with the erection and maintenance of the larger class of house than with agriculture properly so called. As a natural result of the diminution in number of those employed in agricultural pursuits, agricultural wages in many parts of the country had gone up considerably, although there had been no strikes. It seemed to him that this tended to show that where there was really any justification for an increase of wages, it would come about by natural causes, without the intervention of those strikes which had such an unfortunate result upon our industries.

Mr. A. H. BAILEY had been struck by the remarkable influence of the railway system during the ninety years. That system had had the effect of diminishing some towns, of creating other new towns—as, for example, Crewe—and of increasing the great towns, the latter being much more easy of access than the smaller ones. With regard to towns of 100,000 inhabitants, it was noticeable that the rate of increase had been largest in two such dissimilar places as Cardiff and Brighton. The increase in Cardiff had arisen entirely from the export of coal, which he supposed in

1801 was unknown as an occupation, while Brighton became fashionable at the end of the last century, and since then had become practically a suburb of London. Another point to be noticed with regret was the enormous increase in the town population as contrasted with that of the country, and he quite agreed that it was to be deplored that people could not be persuaded to live more in the country.

Mr. R. PRICE-WILLIAMS considered that the relation of the density of population to area should be a most important feature in the census returns, and he hoped that in the census about to be taken that element would be more conspicuous than it had been before. It was difficult to follow the author's classification of the system into thirteen divisions, and he thought it would have been better to have adhered to the limits of the county, however inconvenient those limits might have been to the purpose the author had immediately in view, rather than fix upon arbitrary divisions, since the county limits were now the same as they were in 1801. Take, for instance, the county of Lancashire, where the population was the densest of any known area, exceeding even that of those districts of India for which Mr. Baines had, on a former occasion, claimed the pre-eminence in that respect. In speaking of the population of London, the author of the paper had referred to the "outer rim." He presumed that by that expression Mr. Welton referred to what was called "greater London," and he thought it would be better that they should distinctly understand if the Registrar-General's returns as to this "outer rim" represented "greater London" or not. Mr. Welton mentioned that the densest population that had ever been noted in London was from 150 to 300 per acre. But as he (the speaker) had pointed out on a former occasion, there were several places where the population was denser than this—for instance, Berwick Street, where it was over 400 to the acre. There, happily, owing to causes incidentally alluded to in the paper, it had now decreased to 200. The progressive population to which Mr. Welton referred was really nothing by the influx of population from the rural districts, and as a proof of this he might mention that the greatest increase in rural populations was between 1811-21, and it was due, not to the action of the new Poor Law, but simply to the fact that railways had not then commenced this drain upon the rural population. Since that time the rural population had decreased owing to influx to the towns. He would refer those Fellows who wished to appreciate the American view of the subject to a most able and elaborate paper by Dr. Weber, an eminent American statistician, on "The Growth of Cities,"[1] who had taken as one of his texts the two Papers which he (the speaker) had had the honour to read before that Society on the increase of the population of England and Wales, and on the population of London. He hoped that at the next census they would have statistics not of these thirteen districts, but of each of the counties of England with special regard to the rural and urban populations.

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[1] Columbia University Studies in Political Science, vol. xi (1899).

By that means he thought some light might be thrown on the causes of the rural depletion referred to by the Chairman.

Mr. Mark Whitwill, referring to the principal table on p. 547, where the population of Bristol in 1891 was given as 304,866, said he thought that this figure was about 100,000 out. The population in 1897 was only 230,000, so he thought there must be some error in the figure given in the table. The population of Bristol was now 320,000, but since 1897 the area of the city had been enlarged by taking in surrounding districts with a population of 90,000.

Mr. Noel A. Humphreys explained that the author of the paper had selected and adapted arbitrary limits of his own, and that therefore the figure of 304,866 only represented the population within the arbitrary area which he had chosen to represent Bristol. With regard to the paper, knowing so well as he did the sources of information which Mr. Welton had had at his command, and the labour necessary for the collation of the figures Mr. Welton had put before them, he was lost in admiration at the amount of information which had been crowded into the paper. As had been so well expressed, it was a paper for study and for reference, and as regarded any criticism he might offer, he wished it to be understood that he did not wish to depreciate the value of the paper. Mr. Welton had undertaken what might really be called a Herculean task. He had boldly disregarded all recognised boundaries of towns, and had made his own estimate of what really constituted each town dealt with in the paper. Mr. Welton had shown great discrimination and acumen in arriving at his results, but he thought that some explanation of the principle he had adopted in fixing the boundaries of towns, and also in what way he had estimated their varying areas, was necessary, in order that his figures might be accepted and turned to useful account. Take for instance the population and area of London. Mr Welton began with an estimated area of 44,000 acres in 1801, and gradually increased the area to 243,561 acres in 1891. Now the system more generally applied was to take the areas of towns as they now existed, and then to find out what population existed in those same areas in past years, and count as rural the population that had been rural throughout the whole period. The areas, moreover, which Mr. Welton had adopted in the case of Liverpool and other large towns were so entirely different from the recognised official areas, that some explanation of the exact principle adopted by Mr. Welton seemed actually necessary in order to determine the true value of his figures. Perhaps the point of greatest interest to which the paper called attention was the very small area occupied by the whole town population. Taking the official areas, the census report of 1891 showed that only 9 per cent. of the area of England was occupied by the whole urban population, and that the remaining 91 per cent. was rural. This 91 per cent. of the area which was rural contained, however, only 28 per cent. of the population of England and Wales. The census of 1891 showed, moreover, that this rural area gave on the average 4 acres to every man, woman, or child enumerated, or 20 acres to every family of five persons. With this fact before us it could scarcely be said as yet that this country is over populated.

Dr. G. B. LONGSTAFF thought Mr. Welton was deserving of the highest praise for the labour he had undertaken in arriving at true areas and natural areas; but, as the previous speaker had intimated, the moment one made a new area there was a difficulty in comparing the figures with the results obtained by other people. The divisions Mr. Welton had adopted did not differ greatly from the registration divisions, and if he had made them even a little nearer (or even had explained the extent of the differences), comparisons would have been facilitated. In making comparisons of rural populations, he (the speaker) had found it necessary to group the counties to some extent in order to get satisfactory results. The English counties had not been constituted for statistical purposes. They were very different from the French communes or departements. Mr. Welton referred to the fact that in many European countries there was a great augmentation of births after 1814; and it might well be that population increased after a war. But since those early years of statistics the accuracy of records had been much improved, and one had to be quite certain in considering a fact of the kind that it was not, at least in part, a question of improved registration and greater accuracy in census taking. Another important point to which Mr. Welton called attention was that the rate of increase in London could not be maintained. Obviously the same proportional migration from country districts to London would not result in the same proportional increase of the latter, and a small town would necessarily increase in a more rapid ratio than a larger one. In a small town the establishment of a new industry employing 2,000 or 3,000 hands might mean increasing the population by 100 per cent., but the establishment of half-a-dozen such industries in a town of 100,000 inhabitants would not produce anything like the same effect. In dealing, therefore, with percentages of increase of towns, they were on rather dangerous ground. A small migration might be of relatively greater importance in a particular district than a large migration elsewhere. He congratulated the author upon his adoption in the tables of the method of comparison of the population at the two periods with which he dealt. The taking the population of 1801 as 100, and the showing of that of 1891 as a figure proportionate thereto, seemed a very clear way of illustrating the movements that had occurred, and one for such a purpose much more easily appreciated than that of percentages.

Mr. R. H. HOOKER, while fully recognising the immense amount of labour bestowed on the paper, concurred with Mr. Humphreys's criticism as to the difficulties placed in the way of students who might desire to make use of the results, owing to the absence of data to show how the areas had been classified. If he understood the author correctly, the areas of towns, for instance, were certain areas defined in 1891, which comprised various parishes not included in 1801, and to discover these would involve doing over again the laborious work which Mr. Welton had already done. But the author further stated, p. 529, that small towns rarely covered more than 400 to 600 acres, usually much less, and that any acreage beyond might in general be treated as part of the open country. But no clue was given as to which 400–600 acres, out of possibly some thousand given in the census as the area of the town, had been selected; and it was accordingly impossible to use Mr. Welton's areas for comparison with other data, such as vital statistics in town and country.

Mr. T. A. WELTON, in reply, observed that the inconvenience of dividing up the facts by counties was twofold. In the first place, some counties had a large town on the very margin, such as Birmingham and Bristol, and good and intelligible results were only to be obtained by taking large towns like those as central, and not as marginal places. Secondly, the memory more readily follows a small than a great number of details. It had been remarked that the large increase of rural population from 1811 to 1821 seemed to be due to the non-existence of railways. This point was that in the early part of the century, when the old Poor Law prevailed, as had been explained by Miss Martineau in "Lessons in Political Economy," a congestion of population in rural districts was going on, and the rural population was becoming disorderly and lazy. Some parishes were going out of cultivation through the rates being driven up to support so many paupers. Hence the desire for the new Poor Law, which made the rural parishes not so attractive as they had been to the less laborious. Then came railway development and new industries, which gave labourers a chance of a fresh start in new districts. He regarded the operation of the new Poor Law as the most important factor which had been brought to bear on rural districts in the whole ninety years under review. As regarded the population of London, he had, for the purpose of tabulation, always taken the population of the wider London, but, in the summary tables numbered 1 and 2 for 1801 and 1891 he had, for the purpose of exhibiting the true state of things, adopted diminished areas for London and other towns, larger at the latter date because of the gradual increase of area occupied, and the continual accretion of outside populations. As regarded the population of Bristol, the area adopted included the populous districts on the other side of the Avon, and, in fact, showed Bristol at its largest, and, of course, he had adopted the same area for the whole time, save in the two summaries. As regarded his plan of operations he had aimed at showing with some degree of clearness what was the normal condition of things in the open country, and how far that was affected by the existence of industries other than agriculture. The difference between the urban districts that Mr. Humphreys had referred to, and his own populous districts was that he had taken into account districts other than large towns, which were densely peopled, as well as the towns Mr. Humphreys would have in mind. Moreover, it must be recollected that his boundaries were not the same as those of Mr. Humphreys. In further reply to Mr. Humphreys, he would say that he had kept a free hand as regarded Liverpool and other big towns, whilst in reply to what Mr. Hooker had said as to the area taken for the towns at the two extreme periods under review, he had exercised discretion. He had assumed that the proper area of a town could be measured with some degree of accuracy, and that the area outside an approximate boundary being fixed, outside inhabitants might be roughly estimated and thrown off as extraneous. He had formed his estimate of density for exterior areas in each case after studying the character of the surrounding districts. Though it was entirely a matter of opinion, he believed he had always thrown off quite as much as he should have done. The increase of births after 1814 was a notorious fact, and those who had studied the early reports of the Registrar-General, in which are found tables of births and deaths in countries like Denmark and Belgium, would see that the paucity of births before, and the great number after, that time had left their mark on the ascertained ages of the population at censuses taken long afterwards, and were quite incapable of being disputed as facts.

The PRESIDENT then proposed a vote of thanks to Mr. Welton for his paper, which was carried unanimously.

MISCELLANEA.

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I.—*Population and Birth-Rate, illustrated from Historical Statistics.*

By Marcus Rubin.

[Read before Section F (Economic Science and Statistics) of the British Association at Bradford, September, 1900.]

When I was engaged, some twenty years back, on the reduction of the results of the Copenhagen census of 1880, it occurred to me that it would be interesting to obtain information in regard to the population of Copenhagen at as distant a period of the past as information on that point could be obtained. I collected material from the church registers of births from the time when such registers were first kept, and this formed the principal feature of an essay entitled: "A Contribution to the Population Statistics of Copenhagen in the Century 1630—1730."[1] The reasons why I preferred the material obtained from the church registers to that obtainable from records of taxation and the like for the purpose of a computation of the population, and why from those registers I preferred the records of births rather than those of deaths, are set forth in the essay in question. There, too, the question is discussed of what precautions are necessary in the use of the material thus obtained. As a whole it may be stated that it was satisfactory, and could be used as a basis, not only for the desired calculations as to population, but also, indeed especially, for the purpose of throwing light on questions of no slight social interest in relation to the history of that time.

I.

In the essay above referred to, I based my argument on the fact that, in the seventeenth and eighteenth centuries, the birth-rate was very considerable, lying between 32 and 40 per 1,000 of the population—on the average, one twenty-eighth of the population—because, both publicly and privately, fertility was at that time highly esteemed.

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[1] Historisk Tidsskrift, 5 Række, III.

From the point of view of the State, the reasons for this are clear. Under governments as a rule absolute, and whose policy was mercantilist, there was need for large numbers of men, in the army, in manning ships of war and merchant vessels, in agriculture—the peasants being in a condition of serfdom, *adscripti glebæ*—and in industries vigorously springing into life, so as to secure a sufficient labour supply, whether under the stimulus of natural or of artificial encouragements. The economic writers of that time are, further, all much concerned about the meagre population of the countries to which they belong, and about means to remedy this defect. There was a strong desire to encourage fertility, and also to restrict mortality. It was actually the latter on which the question really turned, for no fertility could make good the losses due to the constant wars, the terrible attacks of plagues, and, more important than all, the destructive small-pox and other lingering or violent diseases, which, as none knew of effective cures, were chronic, and for which, as is known, the ignorance of the population and their whole mode of life provided the best possible medium for wide development.

Then, too, by the side of the State was found the Church. The words of the Scriptures: "Be fruitful, and multiply, and replenish the earth," were deeply impressed on young and old alike. By this, as I at one time expressed myself, I naturally do not mean "that marriage was entered upon as a consequence of a sense of duty, religious or patriotic, or as a result of the teachings of economists." But it clearly was not without importance, in reference to the bringing of children into the world, and that as extensively as possible, that this should be regarded not merely as a right, but as a duty; whether in those times of less developed intelligence, society and sections of society were supported by what was taught, preached or desired in the more learned circles, or whether the precise opposite should be the case.

There seems to be, however, some evidence against the idea that the State and society really desired a numerous population, in the fact that much more extensive classes of the community than now-a-days were condemned to celibacy. The old European laws touching this question were severe, even to barbarity. They were concerned with preventing the entrance into a community of persons or families who were likely to become a burden on the rest.

In Bavaria, the classical land for this description of legislation, the regulations of the Government and the police ordinances of 1616, forbad the marriage of servants, day labourers, and others without property, and the punishments with which those were threatened by the legislation of 1751 who, without the permission of the superior authorities, entered into wedlock, and were afterwards unable to support themselves without begging or the like, extended to corporal chastisement and imprisonment.[2] It must, however, be stated that, except for the limitations imposed on the marriage of the military, it was not till the nineteenth century that economic limitations were included in the Danish regulations touching matrimony.[3]

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[2] On this question in general *cf.* the article "Eheschliessing" in *Handwörterbuch d. Staatswissenschaften*, 2nd edit. Jena, 1899.

Of more importance than the restrictions of the law was the economic structure of society in former days. The domestic servant class then, as now, was unmarried, but that class was much more numerous than at present. The subordinates in the industrial class and in handicrafts were not, as in our time, free and independent, but lived for the most part in the houses of their masters, and, at any rate, were accustomed to wait till they became masters before marrying; their chances of attaining the position of master were greater then than now. The same rule applied to other journeymen in various employments, whether in town or country.

These hindrances of social origin, together with those of legal origin, where the latter existed and were enforced, unquestionably had their influence; indeed, no one in those days failed to recognise the fact. But their importance must not be estimated too highly. The fact that they existed in a State and a society contemporaneously with the desire for a numerous population, is consistent with the modes of life, on the economic side, of those times, and with the organisation of the policy; and the reduction in marriages, &c., which resulted therefrom was a necessary evil, which could not be avoided in the social organisation of the time. But it was less marked than we should be inclined to expect from our modern experience, because it was the universal rule that, as soon as the obstacles to that course were surmounted, every one proceeded to get married.

The church registers do not afford the material necessary to establish this position, nor for an exact statement in regard to marriage-rate and marriage-age in earlier times; since the records do not include any statement of the age of either bride or bridegroom. It is possible, however, so far as relates to the eighteenth century, to obtain an idea of how early and to what extent people were married, by considering *the proportion between married and unmarried at different ages (and in different social classes) which the censuses of the century show.* I have attempted, with this purpose in view, to make use of the statistical results of the census of 1787.[4]

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[3] The Poor Law of 9th April, 1891, lays down the rule that "when a male adult has received poor relief in this country (*i.e.*, Denmark) in the course of the last five years, and the same has not been refunded, he is not entitled to marry without the consent of the administrators of the poor law in the district where he is settled." But when, in the poor law of 20th April, 1824, there occurred the first of the enactments touching this point, the conditions were more stringent, as, by the terms of that law, neither bride nor bridegroom might have received poor relief, and the time limit of five years was not prescribed. In the proposals of the commission which formed the basis of the marriage clauses of the poor law of 1824, the whole of this provision was lacking, but it was inserted by the Council, on the ground that "legislation should set bounds to the numerous marriages which are entered on to the injury of the community by persons who have no other expectation of providing for the rearing of a family than to receive support from the poor law authorities."—*Kollegialtidende*, 1824, p. 260.

At the date of that census, the population of Denmark (*i.e.*, the whole kingdom) was divided as follows in regard to sex, age, and matrimonial condition :—

TABLE I.

Ages.	Unmarried.	Married.	Widowed.	Total.
Males.				
Under 20	169,784	64	1	169,849
20—40	73,007	54,987	1,016	129,010
40—60	7,406	73,000	3,568	83,974
60 and over	1,279	25,179	6,904	33,362
Total	251,476	153,230	11,489	416,195
Females.				
Under 20	168,888	895	9	169,792
20—40	58,475	68,902	2,683	130,060
40—60	6,782	65,587	12,176	84,545
60 and over	2,359	18,143	18,951	39,453
Total	236,504	153,527	33,819	423,850
Grand Total....	487,980	306,757	45,308	840,045

The aggregate of married persons, then, in the census of 1787 was 306,757, *i.e.*, 365 per 1,000 of the population. A century later, at the census of 1890, the number of married persons amounted to 748,296 in an aggregate population of 2,172,380, *i.e.*, only 345 per 1,000. In proportion to the aggregate population, then, there were, in 1787, 20 per 1,000 more married persons—or 10 per 1,000 more married pairs—than in 1890.

If the proportion between the number of existing marriages in any given year and that year's total of births—living births and stillbirths, legitimate and illegitimate—were constant, the matter under discussion would now be quite simple. Since the aggregate number of births in 1890 amounted to 182 per 1,000 of married pairs (1·8 in 10) and 31·4 per 1,000 of the population, the number of births in 1787 would have been 31·4 + 1·8, or 33·2 per 1,000. The greater birth-rate in the eighteenth century at the date stated would thus be established. But the question cannot be disposed of so simply. It is very far from being the case that the number of births in a country is determined simply by the number of existing marriages. The age of marriage, its duration, and a good many other matters relating to ages, to births and to deaths, and, further, some moral and social influences, must be taken into consideration as well. Most obvious is the importance of age-distribution, since where there are many children, there must be, under otherwise like conditions, few married persons, and conversely. If, then, conclusions as to the marriage-rate are to be deduced from the number of existing marriages, this must be considered in relation to the numbers at those ages where marriage could in the main take place.

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[4] No official report on the census of 1787 was issued, and the authors of that and of later times have only published scattered and summary results. A statement of the principal results will be found in *Statistisk Tabelværk*, vol. i (Copenhagen, 1834), Introduction. Some data, throwing light on occupational conditions, have been recently given by Professor Westergaard in the first volume of *Sociale Smaaskrifter* (Socialism and the Evolution of Society, Copenhagen, 1899). The reduced tabular results, set forth with great care, exist in the Statistical Bureau of the State. I propose that, as opportunity occurs, they should be, at any rate in part, made public in one of the publications of the Bureau. Meanwhile, I have made use of them for the purpose of providing the extracts and statements to be found in the text.

Let us, then, on the basis of Table I, calculate the number of married in proportion to the aggregate population over 20 years of age, and then compare the resulting percentages with the corresponding figures from the census of 1890 (*cf. Statistisk Tabelværk*, 4 Række, Litra A. Nr. 8a).

TABLE II.—(*a.*) *Census of* 1787.

[Of 100 in each age-group, and for each of the sexes.]

Ages.	Males.			Females.		
	Unmarried	Married.	Widowed.	Unmarried.	Married.	Widowed.
20—40	56·6	42·6	0·8	44·9	53·0	2·1
40—60	8·8	86·9	4·3	8·0	77·6	14·4
60 and over	3·8	75·5	20·7	6·0	46·0	48·0
20 and over	33·1	62·2	4·7	26·6	60·1	13·3

(*b.*) *Census of* 1890.

20—40	48·8	50·1	1·1	43·5	54·4	2·1
40—60	8·8	85·0	6·2	12·0	73·4	14·6
60 and over	6·4	67·1	26·5	9·6	42·2	48·2
20 and over	28·2	64·6	7·2	27·1	58·2	14·7

This table shows us at once the necessity of considering the population over 20 years of age apart from those under that age, when we wish to determine the frequency of marriage, since, at any rate for males, the table shows a relatively smaller number of married in 1787 than in 1890—62·2 against 64·6 per cent.—the opposite of what we found when the population as a whole was considered. This is connected with the fact that the ages below 20, at which ages hardly any married are recorded, are more strongly represented in the census of 1890 than in that of 1787. But we must not overlook the fact that the number of marriages is determined best by the number of *married women*; this number is somewhat greater at each of the two censuses than the number of married men, a difference the ground for which is found, among others, in the consideration that some of the married men may be seamen absent on a voyage, or may be in one way or other temporarily absent, and it is for that reason most desirable to take as basis of our calculation the more stable figure for females. The figures relating to females show, that *when the population over* 20 *years of age is separately considered, the number of married was greater in proportion at the census of* 1787 *than at that of* 1890. How can we reconcile this with the proposition that for certain sections of the population there were formerly encountered a number of social obstacles to marriage?

Let us consider first the *male sex*. The table shows for these, at the ages of 20 to 40 years, 56·6 per cent. *unmarried* in 1787, against 48·8 per cent. in 1890, an excess of considerable dimensions at the earlier date. Such a process of reasoning as the following may be suggested: there were relatively fewer persons under 20 in 1787 than in 1890, and thus relatively more over 20. But when such a state of things exists, the excess is mainly in the early twenties, ages at which relatively few were married, and this satisfactorily explains the excess of unmarried of 1787. But this explanation loses its foundation when we observe that the excess of unmarried in 1787 is most strongly marked in the later years of the interval from 20 to 40, as the following figures show:—

Males.

	20—30 Years of Age.			30—40 Years of Age.		
	Total.	Of which Unmarried.	Per Cent. Unmarried.	Total.	Of which Unmarried.	Per Cent. Unmarried.
1787....	69,383	55,659	80·2	59,627	17,348	29·1
1890....	151,835	112,044	73·8	134,137	27,715	20·7

Thus, regarded relatively, the ages 20 to 30 show one-tenth more of unmarried in 1787 than in 1890, but at the ages 30 to 40 we find nearly half as many again. (The ages cannot be given more precisely, as the census of 1787 only concerned itself with ages in ten-year groups.) There must, then, be some operative causes at the basis of the facts: at the ages 20 to 40 as a fact marriages were *less* frequent in 1787 than in 1890.

An indication that, occasionally at any rate, people married earlier than nowadays, is to be found in the fact that the number of married men (and widowers) under 20 at the census of 1787 reached 65, and at the census of 1801 it was 116; in proportion to the number of the total male population under 20 in 1801 and 1890, the number of married under 20 should have amounted in 1890 to 300, but was in fact only—12. Thus there were some who married earlier then than now, many who married later. What was the nature of the division between these?

In finding an answer to this question, we have the good fortune to be provided, in the census of 1787, with a division of the population *according to sex, age, and civil condition in each of the* *various occupational groups.* From these I have extracted the following two summaries relating respectively to the towns (including Copenhagen) and rural districts of Denmark :—

TABLE III.—*Males 20 to 30 Years of Age.*

(*a.*) *Towns, including Copenhagen, at the Census of* 1787.

	Unmarried.	Married.	Widowed.	Total.
Officials of the State	113	18	2	133
Army officers	184	12	1	197
Soldiers	3,630	432	14	4,076
Naval officers	53	3	—	56
Seamen (Royal Navy)	963	562	11	1,536
Civil servants	457	140	3	600
Merchants	166	107	4	277
Their servants and apprentices	510	12	—	522
Artists and manufacturers	130	126	1	257
Their servants and apprentices	927	112	4	1,043
Handicraftsmen	302	503	8	813
Their journeymen and apprentices	3,578	318	3	3.899
Fishermen and sailors (including captains)	511	260	4	775
Other independent occupations	258	271	2	531
Domestic service	2,574	105	6	2,685
Day labourers	205	203	4	412
Capitalists	39	9	—	48
Pensioners	39	3	—	42
Paupers	44	4	—	48
Others	565	81	1	647
Total	15,248	3,281	68	18,597

(*b.*) *Rural Districts at the Census of* 1787.

	Unmarried.	Married.	Widowed.	Total.
Clergy	234	106	1	341
Civil servants	85	37	—	122
Landed proprietors	203	39	1	243
Small farmers	10,459	4,599	31	15,089
Peasants	622	1,376	13	2,011
Cotters	110	346	5	461
Artists and manufacturers	435	329	4	768
Handicraftsmen	1,953	1,263	16	3,232
Fishermen and sailors (including captains)	814	390	1	1,205
Other independent occupations	111	69	—	180
Domestic service	24,770	578	32	25,380
Day labourers	334	1,072	11	1,417
Capitalists	5	1	—	6
Pensioners	16	—	—	16
Paupers	159	16	1	176
Others	101	36	2	139
Total	40,411	10,257	118	50,786

Of the 18.597 men in the towns, 15,248, or 82·0 per cent., were unmarried. Of the 50,786 men in the rural districts, 40,411, or 79·6 per cent., were unmarried. The corresponding figures for men between 20 and 30 years of age in 1890 were 73·1 per cent. and 74·2 per cent. If we now group the urban population in two sections according to social position we obtain the following summary:—

α.

	Total.	Of which Unmarried.
Army and naval officers	253	237
State employees	733	570
Mercantile	277	166
Artists and manufacturers	257	130
Master craftsmen	813	302
Fishermen and sailors, including captains and seamen in the royal navy	2,311	1,474
Other independent occupations, including (independent) day labourers	943	463
Capitalists and pensioners	90	78
Total	5,677	3,420

β.

Soldiers	4,076	3,630
Servants and apprentices in mercantile houses	522	510
,, ,, of manufacturers	1,043	927
Journeymen and apprentices in handicrafts	3,899	3,578
Domestic servants	2,685	2,574
Paupers and others	695	609
Total	12,920	11,828

Class α includes 5,677 persons, 3.420 of whom were unmarried, making 60·2 per cent.; Class β includes 12.920 persons, 11,828 of whom were unmarried, or 91·5 per cent. The propertyless and dependent class had thus over half as many again in proportion unmarried as those better situated.

In both classes are found, it is true, some exceptions to the position given by the averages: this is especially the case for the first class, in which, as might be expected, the group of officers is mainly composed of unmarried persons (to the extent of about 94 per cent.), while on the other side the group of master-craftsmen includes only a good third (about 37 per cent.) of unmarried. But the division adopted gives on the whole a true impression: of the well-to-do or independent population four-tenths were married in the age-group 20 to 30, of the rest of the population under one-tenth. This relation is clearly somewhat affected by the fact that Class α includes a somewhat older population than Class β, because independence is, of course, attained rather towards the end than at the beginning of the twenties; that this consideration can yet by no means suffice of itself to explain the marked difference, but that this difference depends on deep-seated social causes, will shortly be demonstrated.

A separation of the rural population (Table III *b*) into two classes can be very easily made by grouping in the first class all clergy and civil servants, the mercantile class, craftsmen, seamen, and all kinds of cultivators of the soil (as well as the few capitalists, pensioners, paupers, and others); in the second class the domestic servant group alone, since this at one and the same time represents the servants and journeymen, in fact the dependent class. Thus we obtain the following:—

	Total.	Of whom Unmarried.	Per Cent. Unmarried.
All independent persons	25,406	15,641	61·6
Domestic servants	25,380	24,770	97·6

The first class has, thus, an unmarried section amounting to about 62 per cent. This figure is dominated by the principal section of the group, the farming class, which contributes three-fifths of the whole class, of whom 69 per cent. were unmarried; of the whole superior class, servants of the State and landed proprietors, nearly three-quarters (74 per cent.) were unmarried; but of the peasants, cotters, and day-labourers, only a good quarter (27 per cent.) were unmarried.

As a whole the class shows an unmarried percentage of 61·6, corresponding to the figure of 60·2 per cent. of unmarried among the urban independent class. The relative figure for the dependent class in the rural districts is, however, somewhat greater than that of the dependent urban population—this latter is also less uniformly composed—namely, 97·6 against 91·5 per cent.; clearly, however, there is no fundamental difference shown in these figures.

When we proceed to the comparison of the facts we have gleaned from the census of 1787 with corresponding facts for the present time, we find, unfortunately, that the Danish censuses of the nineteenth century have omitted the comparison of occupation, age, and civil condition. It will be undertaken in the census of 1901, but for the past there is only available the information relating to the city of Copenhagen. On such a basis, making use of the census of 1885, a grouping of the population into five classes was made in Rubin and Westergaard's *Aegteskabsstatistik* (Marriage Statistics. Copenhagen, 1890).

The first three of these classes comprise: State employees, lawyers, liberal professions, manufacturers, merchants, owners of the larger class of businesses, &c. (Class I); the lesser handicraftsmen and business men, retail dealers, refreshment house keepers, ship captains, &c. (Class II); schoolmasters, musicians, clerks, and the like (Class III); while Classes IV and V include subordinate officials, domestic servants, &c. (Class IV); skilled workmen (journeymen), factory employees, labourers, and, generally speaking, the labouring population proper (Class V). The first three classes may thus be compared with Class *a* of the urban population, the other two with Class β. The age-grouping, in the occupation statistics of the 1885 census, and consequently in the book referred to, is arranged, not in the ordinary fashion of consecutive decennia, but in accordance with the grouping of actual life; we have, thus, not the age-group 20 to 30 years of age, but 18 to 25 and 25 to 30. We shall use the figures for the age-group 25 to 30 years of age as the basis for the comparison which follows.

At the Copenhagen census of 1885, 54·5 per cent. of the male population between 25 and 30 years of age were unmarried; at the census of 1890 the percentage was 53·7; in the latter year the percentage for all the towns taken together was 52·4. When the whole urban population of 1787 is compared with the population of Copenhagen in 1885, we may then regard the latter as giving a fair representation of the condition of the urban population a century after 1787.

The 54·5 per cent. of unmarried in Copenhagen in 1885 in the age-group 25 to 30, were distributed in the following manner:—

	Total.	Of whom Unmarried.	Per Cent. Unmarried.
Classes I to III (α)	4,085	2,538	62·1
,, IV and V (β)	8,876	4,521	50·9
Total	12,961	7,059	54·5

In the year 1885 the dependent class in Copenhagen numbered 8,876 of a total of 12,961, or 68·5 per cent.; in the year 1787, in the whole of the Danish towns, it numbered 12,920 out of a total of 18,597, or 69·5 per cent.; the division of social classes was, so far as this shows the facts, the same. But the percentages of unmarried were quite different:—

	1787.	1885.
Class α	60·2	62·1
,, β	91·5	50·9

The fact that the percentage of unmarried in Class β was only 51 per cent. in 1885 against 92 per cent. in 1787; that in the one case nearly the half, in the other barely one-tenth, were married (or widowed), is partly explained by the consideration that in 1885 we have only the ages 25 to 30 included in our figures, while in 1787 we include all between 20 and 30. By far the greater part of the unmarried will, of course, be found in the first half of the ten-year group. But this is far from being a sufficient explanation of the difference, as may be seen from the fact that *in* 1885 *the whole of the unmarried in the age-group* 20 *to* 25 *amounted to* 91·3 *per cent. of the group, a smaller percentage than that found in*

Class β *in* 1787 *for the unmarried between* 20 *and* 30 *years of age* (91·5 *per cent.*), *in spite of the obviously far higher average age in the* 20 *to* 30 *year age-group than in the* 20 *to* 25 *year group!* The difference is, then, one of a social nature. The journeymen and servants of former times were as a rule unmarried, while in our time skilled workmen and factory employees, on account of the high level of their earnings (and the fact that they are received in money, not in kind),—and because, for the greater part, as stated earlier, they attain no better position by waiting,—are married as journeymen or labourers. On the other hand it is in the highest degree characteristic that we find a comparatively larger number of unmarried in the independent class in 1885 than in 1787, since this implies that *in* 1787 *the whole age-group* 20 *to* 30 *included a relatively smaller number of unmarried among the independent class than the age-group* 25 *to* 30 *contained a century later.* In 1787, Class α contained 60·2 per cent. in the towns, 61·6 per cent. in the country of unmarried men between 20 and 30 years of age; in 1885 of the men between the ages 25 and 30 in Copenhagen there were 62·1 per cent. unmarried.

It is seen, thus, that when we previously found a much smaller percentage of unmarried in class α than in Class β in 1787, the explanation of that result is not to be sought simply in the presumably higher average age in the one class than in the other, since the percentage of unmarried in Class α is less than the corresponding percentage a century later in the same class, although the average age is unquestionably, from the nature of the available information, considerably lower at the earlier date, and also because the contemporary movement in Class β has been precisely the contrary. There was a real difference in the age of marriage among both the independent and among the dependent portion of the population then as there is now, but where this was formerly high it is now low, and *vice versâ.*

Even though the social and economic structure of the community of old restrained one section of the population,—the dependent section,—from marriage, the other part of the population, the independent section, married far earlier than now-a-days. There was, perhaps, as the figures previously given seem to suggest, some holding back in certain circles of the best society.[5] But for ordinary independent people marriage at an early age was unquestionably a matter of course.

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[5] This is supported by scattered statistics relating to former times and by writers of that period. Among others, reference may be made to *De fórsta officiela relationerna om svenska Tabelværket, årene* 1749-57, published by Hielt (Helsingfors, 1899): these official Swedish records from the middle of the eighteenth century are of very great historical-statistical interest, and are now easily accessible. Here it is said (p. 81), "Entails prevent numbers of the knightage and of the nobility beyond others from marriage on account of their vain desire to keep up the splendour of the family name." In Baümann's edition of Süssmilch's *Die göttliche Orgdnün*, he states (vol. iii, p. 204, Berlin, 1776), "that superior people, who could not afford to take a wife, because they could not bring up children as their position required, should enter into left-handed marriages(!); the children would take their mother's name and be brought up as craftsmen, &c., while ill-feeling among the lower classes would not be aroused, "die weder einsehen noch beürtheilen können, was bei Leüten von vornehmen oder mittleren Stande zür Entschaldigung desselben (concubinage and the like) vorgewendet werden kann."

Those who could marry early, then, did so. But those also who were unable to marry till late in life—when they no longer held the position of journeyman, labourer, &c.—yet married. This finds expression in the fact that while we find for the age-group 20 to 40 a percentage of unmarried of 57 in 1787 against 49 in 1890, we find for the age-group 40 to 60 a percentage of 8·8 unmarried at both censuses; and for the age-group 60 and over, 3·8 per cent. in 1787 against 6·4 per cent. in 1890 (*cf.* Table II). This implies, in other words, that the unmarried members of the male population in the younger age-groups in the eighteenth century married later on to such an extent that the advantage possessed by the nineteenth century's male population is lost when we come to middle life, and that among the old only half as many were unmarried in 1787 as in 1890. Ordinary people now-a-days marry early or do not marry at all; then people got married as soon as they were able, and above all avoided remaining permanently single.

But this is not all. At the same time as the age-group 40 to 60 shows relatively *equal numbers* of bachelors in 1787 and 1890, there were *more married* (86·9 against 85·0 per cent.), because the number of the married was recruited also from the ranks of widowers, who were fewer in number in 1787 than in 1890. Not only would one avoid remaining single, but one preferred not to be a widower in those old days. The male population over 20 years of age shows, in 1890, 7·2 per cent. widowers; in 1787, 4·7 per cent.; and though the difference in the death-rate, &c., may complicate the question a good deal, there is yet no doubt that the figures give a true—even if not a precise quantitative—expression of the much greater tendency of widowers to re-marry then than now. When we come to the age-group 60 and over, we find in 1787 three-quarters of the old people married, against only two-thirds in 1890; at that time precisely one-eighth more of the old men were married than is now the case.

The diminished inclination of widowers to re-marry is further established by modern statistics—and, in this case, we have at our disposal the material for a thorough investigation of the question—from which we select, in continuation of the preceding argument, the brief tabular statement following:—

Of 10,000 men who were married, there were found—

	First Marriage.	Second Marriage.	Third Marriage.	Fourth Marriage, or Beyond.
1855–59........	8,665	1,234	92	9
'90–94........	8,901	1,031	63	5

Thus, in the course of thirty-five years, the number of widowers among 10,000 bridegrooms was reduced from 1,335 to 1,099. The reduction in the marriage-rate among widowers is shown from the fact that in the years 1860-69, a yearly percentage of 6·10 of the existing widowers was married; while in 1885-94 this percentage was reduced to 3·95. This feeling, then, of the desirability of being in the married state—even if it was only late in life that the possibility of marriage presented itself, or if it needed repeated marriages to attain the end in question—was clearly an important element in what was esteemed to be right and proper in former times.

We now proceed to consider the percentages shown in Table II for *females.* As has already been stated, the population over 20 years of age contained a smaller proportion of unmarried, and a greater of married, women in 1787 than in 1890. But did women also marry later in life in 1787 than in 1890?

The contrary opinion finds support in the fact that, at ages under 20, the census of 1787 recorded 904 married women (and widows), and thus in 1890—having regard to the number of women under 20 in the two censuses—there should have been some 2,500 to maintain the same proportion. There were actually only 956! But we find in Table II that the percentage of unmarried at the ages 20 to 40 was 44·9 in 1787, against 43·5 in 1890, which indicates a state of affairs resembling that found in the case of the men, a compulsory condition of celibacy for certain sections of the population. In a certain degree this was undoubtedly the case, since the class of domestics, far more numerous then than now, could not marry. But this state of affairs is far from being of the same importance as in the case of the men. The occupation records of the censuses do not afford any means of proof, on this point, in the case of females. But, that women delayed marriage till an advanced age in a much less degree than did men, is shown by the following:—

Percentage of Women Unmarried.

Ages.	1787.	1890.
20—30	64·4	62·2
30—40	20·1	21·5

The unmarried were thus somewhat more numerous at ages 20 to 30 in 1787—perhaps, at any rate in part, as a result of a crowding in the years close to 20, more marked in 1787 than in 1890—but even in the very next ten-year age-group the relation is reversed, and, at ages 30 to 40, modern times show more unmarried women; while, if we take the higher ages, we find at ages 40 to 60 only 8 per cent. unmarried in 1787, against 12 per cent. in 1890; and at ages 60 and over, 6·0 per cent. against 9·6. Take it, then, that in certain classes of the population there were a good many more unmarried women at something over 20 years of age then than there are now—at the same time that in some sections there were more quite young wives—it is clear that the defect was made good with but slight delay. Further, the modern habit of self-maintenance was not then known among the women of the *bourgeois* class; no one cared to be an "old maid," and the chance of being one, as the figures show, was much smaller for the female population as a whole than it now is.

We obtain, then, the following result *for both sexes:* In spite of the fact that in the *independent* sections of the community marriage took place, as a rule, at an earlier age in the eighteenth century than it does now, the average age of marriage was yet higher at that time, because the more numerous *dependent* classes married later. This was much more marked in the case of men than in that of women, and the average age at marriage was further raised among men by the fact that widowers re-married with much greater frequency than they now do. There must thus have been a difference between the age of bride and groom considerably greater than in the marriages of our time, a condition of things which yet, in the averages, was to some extent compensated by the fact that the marriages of young men with elderly women, especially with widows, were also of much more frequent occurrence than now.

How this development has been continued right down to our own days will appear from the fact that, of 1,000 marriages, there were, in the years 1855-59, 752 between bachelors and spinsters; in the years 1890-94, 860, so that the marriages in which one or both of the contracting parties had previously been married were reduced from 248 to 140 per 1,000. Similarly we find that the marriages in which the bridegroom's age is only a few years in excess of that of the bride have been steadily increasing, while those in which the difference of ages is great have been steadily diminishing in the last half of the nineteenth century. (*Statistisk Tabelværk, loc. cit.*)

The census of 1787 has shown us that brides and bridegrooms, especially the latter, were older in former times than they now are; but at that time none cared to be unmarried, especially after a first experiment in matrimony, and therefore marriages were more frequent, the number of existing marriages greater, than in our time.

II.

If we now pass from these observations relating to marriages to the question of the *birth-rate*, it will be best to endeavour first to clear the ground in relation to the legitimate births. Since it is by women that children are borne, and—taken *cum grano salis*—the number of women conditions the number of children, it appears to tell in favour of a high legitimate birth-rate in the first place that, not merely in proportion to the total population, but also in proportion to the number of adult women, there were more married in 1787 than in 1890. When, further, this, among other considerations, is taken in connection with the fact that repeated marriages were, as we saw above, much more frequent than now; and that a man may be expected to have more children in two short periods of wedlock and by two wives, than in one longer union by a single wife; we have a further reason to anticipate a high birth-rate. But the higher age at marriage of man and wife tells on the other side. It is certainly in the main the wife's age which determines the fertility of the marriage, but the age of the husband is, naturally, not without its influence on the number of the children. The wife's age, too, as was shown above, may be taken to have been, on the average, higher than now, not only because of the numerous marriages of widows, but also because a considerable section of the single were only married late in life. Even should the difference in the average age have been of no great importance, yet that it may have played its part with regard to the fertility of marriage is in the nature of the case.

Yet, just as we saw that both men and women were restrained in their matrimonial inclinations by obstacles, depending on the structure of the community, which they were unable to overcome, but that, as soon as they were able, they followed the example of their more fortunate fellow citizens, and married; so, too, in the matter of the rearing of children do we find a like compensatory tendency; and as with marriages, so too with families, the figures of our time were surpassed. The natural consequences of late marriages could not be altered; but on this head we are concerned only with an obstacle, not an absolute limit.

To express the matter otherwise: it is not the age of marriage alone which is in a large degree determined by influences of social and customary origin, but this is also the case in regard to the size of families. The question of whether the age at marriage is higher or lower must of course be a determining influence; but with the same marriage-age the number of children may be different as social causes and custom may determine. Before I proceed to the proof of this point, I shall here call attention to the fact that, with conditions otherwise similar, a higher infant death-rate is associated with a greater fertility, not merely for psychological reasons, to replace the lost children, if their education, &c., should not be an economic consideration, but also for purely physical reasons, because the nurture of one child does not oppose any obstacle in the way of a successor. Former times had, as is known, a far higher infant death-rate than modern times; certainly under this influence among others, that married people brought children into the world in as large numbers as possible, even to the injury of the offspring: a *circulus vitiosus*.

The typical example in proof of the fact that early marriages are not necessarily followed by a high birth-rate is the well-known case of France. In the ten years 1881-90, the annual marriage-rate in France was 7·4 marriages per 1,000 inhabitants, the same rate as in Western Europe as a whole, and the age of the brides was lower in France than in Western Europe.[6] At the same time, the number of living births per 1,000 inhabitants was 23·9 in France, against 32·9 in Western Europe as a whole. With the same intensity of nuptiality a difference of nearly 1 per cent. in the birth-rate is found. Roundly we may say that, for each 1,000 married women between 15 and 45 years of age in France, 200 legitimate births occur annually, in the whole of Western Europe, 300.

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[6] By Western Europe is meant Europe with the exception of Galicia, Hungary, Russia, and the Balkan States. (Eastern Europe) *cf.* Sundbärg, Statistiske Ofversigtstabeller för olika länder (1896 *seq.*), from which a number of the international figures used above are derived.

The cause of the low fertility of marriage in France is found in socio-economic considerations, in the desire not to reduce the socio-economic position of oneself and of one's children. The same consideration is at the basis of the fact that we found, at the census of 1880 in Copenhagen, when we compared the families of workmen with the families of that part of the middle class which has a fixed but very limited income, and was set on maintaining its social position, that—under conditions as to the duration of marriage, and the ages of the parties to the marriage, otherwise similar—the number of births per marriage was *one-fifth greater* among the former than among the latter.[7]

With respect to the increase or decrease of the fertility of marriage, we find that the number of marriages has for a generation past varied in the neighbourhood of 7½ per 1,000 of the population in France, while the number of births has steadily diminished from 26½ to 22½ per 1,000. Among other data which point in the same direction, the following may be adduced.

In the city of Berlin, *the number of legitimate births per* 1,000 *married women* was as follows :—

In the year 1876	240
Average of the triennium 1877-79	220
,, ,, '80-82	199
,, ,, '83-85	184
,, ,, '86-88	174
,, ,, '89-91	166
,, ,, '92-94	151
,, ,, '95-97	138

The diminution of the average number of legitimate births per existing marriage has thus been unbroken for something over twenty years past, and has amounted to more than two-fifths, a result not at all affected by any change in the ages of the married women, for a comparison of numbers born to women at different groups of ages gives the same result.[8]

A like diminution in the fertility of marriage to that shown for Berlin, is shown in the following table, in which I have calculated the fertility of marriage in Copenhagen :—

TABLE IV.—*Copenhagen.*

	1 Number of Married Women under 45 Years of Age at the Census.	2 Average Annual Number of Living Legitimate Births.		3 Col. 2 per 1,000 of Col. 1.
1880	26,097	1875–84	7,039	270
'85	32,412	'80–89	8,162	252
'90	35,656	'85–94	8,440	237
'95	37,464	'90–99	8,041	215

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[7] *Cf.* Rubin and Westergaard. *Aegteskabsstatistik* (Marriage Statistics), 79 pp. *seq.*

[8] R. Böckh. *Statistisches Jahrbuch der Stadt, Berlin,* 1899, pp. 47 and 56.

In the course of the last twenty-five years, the fertility of marriage in Copenhagen has diminished by one-fifth.

Lastly, I have made the following calculations for Denmark as a whole. In the period from the middle of the eighties to the present date, the number of legitimate births in Denmark was 863.934 born alive, and 21,877 stillborn, the number of marriages in the same period being 220,216. Dividing the interval into two periods of seven years each, we obtain the following:—

TABLE V.—*Denmark.*

	Number of Marriages celebrated.	Born in Wedlock. (Alive and Stillborn.)	*i.e.*, per Marriage.
1885-91	105,445	438,639	4·16
'92-98	114,771	447,172	3·90
1885-98	220,216	885,811	4·02

We find, thus, a reduction in the number of legitimate births per marriage of one-sixteenth; but the mode of comparison, namely, between marriages and births, gives unreliable results, as the births of any one year are determined rather by the marriages of previous years than by those of that year itself; a large number of marriages in a particular year increases the divisor without having as yet been able to produce any corresponding increase in the number of births, which makes the birth-quotient too small, and *vice versâ.* Yet this mode of approaching the question is convenient for securing quickly a general survey, and the error cannot be great when a fairly considerable number of years are taken into account, as within such a limit of time some compensating irregularities are likely to be found. A seven-year period, which is here considered, is probably about that number of years which in general will elapse after marriage before there are four children of the marriage, and this is the average number per marriage in Denmark. That the reduction in the fertility of marriage, which is here summarily indicated, may also be established in a complete and precise fashion will be seen from the following summary.

Of 1,000 married women in each age-group between 16 and 50 years of age, there became mothers:—

Age.	1878-82. Annual Average.	1885-94. Annual Average.
Under 25 years	508·3	491·4
25—30..................	396·2	390 8
30—35..................	319·0	297·0
35—40..................	236·4	227·6
40—45..................	117·1	111·9
45—50	13·4	11·7

The figures in the two columns are based on the information as to the age of the mother in the register of births—an item of information which is not obtainable for dates earlier than 1878—and the records of the censuses of 1880 and 1890, in regard to the ages of married women. (*Cf.* the volumes of the *Statistisk Tabelværk* relating to these matters.) It is for this reason that the comparison has been made between a five-year period and a ten-year period, beginning earlier and ending earlier than the previously quoted records of marriages and births.

As is shown, there is a diminution of fertility in every one of the age-groups; and, seeing that this is strongly marked at the youngest of the ages given (under 25 years), the reason cannot be sought in a reduction of the age of women at the time of marriage, an influence which in itself indeed might be of importance, since women who can only give birth to few children, or who, with the concurrence of their husbands, desire but few, contribute naturally a comparatively small contingent to the higher age-groups when they have borne children at the lower ages. On the other hand, the view is tenable that the reduction in the age of women at marriage has produced an effect in another manner. The average age for women at the time of their marriage was in 1855-59 28·6 years, and from that date went steadily down from quinquennium to quinquennium, reaching in 1890-94 26·8 years. Since the lower and more fertile age-groups are thus being more crowded with young wives at the expense of the more advanced ages, one might expect that the reduction in the fertility of each separate age-group would be thus counterbalanced; yet such is not the case. Naturally the reduction in the fertility of marriage as a whole is manifested with diminished intensity compared with what would have been shown had the age of women at marriage not been undergoing a steady diminution; but the reduced fertility of the single age-groups is an overpowering influence, which results in the fact that while in 1875-84 for every 1,000 married women between the ages of 16 and 50 there were born in wedlock annually 248·5 children on the average, the figure for 1885-94 was only 236·9, a reduction per 10,000 women of child-bearing ages of 116 children.

From the preceding it appears that, whether we regard the exceptional country, France, the modern great city, Berlin, the various classes of society in Copenhagen, or the latter city and Denmark as a whole, in the last quarter of a century, the number of children per marriage, even under similar conditions as to the age, &c., of the parties concerned, is variable, and is so in virtue of *customs and determining influences of socio-economic origin.* There seems in our time to be a fixed tendency towards a diminution in the fertility of marriage, which may be supposed to have some connection with the increased independence and increased incomes of the working class population, which render possible an earlier assumption of the responsibilities of matrimony than of old, but, at the same time have aroused in the new middle class those middle class notions which exercise a restraining influence on the fertility of marriage. In the true middle class, in any case, these "notions" are unquestionably much more powerful than formerly. Whether we have here more than a temporary phenomenon, I do not propose to discuss in this connection; I have simply been concerned to point out the difference between present and former times.

So far as the eighteenth century, the period before Malthus, is concerned, it may be taken as a fact that in the main the limit of fertility of marriage was set by nature, as already said, alone. We have no special information directly bearing on this point; but I shall venture to refer to a few facts. In the paper to which I have already referred, in which I dealt with questions relating to the population of Copenhagen in the period 1630-1730, there are some figures which we can use here as to marriages and legitimate births for ten years, namely, the years 1697-1700, 1702-04, and 1727-29. In these ten years the average yearly number of marriages was 659; the average yearly number of legitimate children *baptised* was 2,142, or 3·25 baptised for each marriage celebrated. In the decennium 1890-99 27,653 marriages took place in Copenhagen, and there were born in wedlock 80,411 living children and 1.847 stillborn, in all 2·97 births per marriage celebrated. If we take the round figure of 3 births per marriage, and add to the 3·25 births per marriage about the year 1700, which we just now found, a further 8 per cent. or thereabouts—certainly the smallest admissible addition for stillborn (equal in this case to dead before baptism) at that time—we find the fertility of marriage in Copenhagen expressed by approximately 3 children per marriage about the year 1900, against approximately 3½ about the year 1700.[9]

Passing from the special locality, Copenhagen, to the country as a whole, we find the material for a determination of the fertility of marriage lacking. I think we may content ourselves with the available information as to the general fertility of marriage for *European nations* in the centuries preceding our own. As to this our information has not been greatly improved, so far as I am aware, since *Süssmilch's* statement in the following words: "Was nun die Fruchtbarkeit der Ehen selbst anlangt, so wird erwiesen werden, dass nach einer Mittelzahl, die aus sehr grossen Summen ganzer Länder genommen ist, 4 Kinder auf jede Ehe durch die Bank können gerechnet werden." Of all the tabular material, under the circumstances very comprehensive, given by Süssmilch, the most complete, the "Summary Table for all the old royal provinces of Prussia and Brandenburg," supplies the following figures:—

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[9] In reference to the addition of 8 per cent. for those dying before baptism in former times, *cf. Historisk Tidsskrift, loc. cit.*, p. 506.

But three and a half children per marriage was not a large number, and is due to the special conditions of the capital, with the disproportionately large number of military, journeymen in handicrafts, and domestic servants, who could only get married at a quite advanced period of life. In compensation it is probable that the number of illegitimate births was very considerable (*cf.* below). The total number of births (born alive and stillborn, legitimate and illegitimate) amounted in 1890-99 to 31½ per 1,000 of the population; with a total of 3·5 births per marriage, the birth-quotient would be 35⅔ per 1,000, *i.e.*, 1/28th of the population (*cf.* above).

As to the composition of the population of Copenhagen in former times, reference may be made to my essay of 1882; also, for the period about the year 1800, to my book, *1807-14*, chap. ii.

	Married Couples.	Baptised Children.	Children Baptised per Married Couple.
1717	21,118	82,160	3·9
'18	20,560	80,567	3·9
'19	18,663	83,713	4·5
'20	18,637	78,124	4·2
'21	19,475	75,275	3·9
'22	20,077	81,770	4·1
'23	21,109	83,515	4·0
'24	21,181	84,946	4·0
'25	19,877	82,393	4·1
'26	20,331	83,396	4·1
'27	20,469	81,552	4·0
'28	22,044	82,970	3·8
	243,541	980,381	4·0

As we see, this is a table which manifests but few oscillations in either absolute or relative numbers, and its very comprehensive interest—referring to a population of larger numbers than that of the whole of the kingdoms and possessions of the Danish sovereign at that time—seems by no means to have been accepted by Süssmilch without criticism. The conclusion, which in its main outlines would not be altered by combining the marriages of one year with the baptisms of a later year, is further supported by the other tables for longer series of years and various districts to be found in the same work, and also by the Swedish statistical records.[10]

We can hardly secure a closer approximation than that of 4 children per marriage. We find then 4 *baptised* children per marriage, while, in what precedes, we found 4 children, living and stillborn together, per marriage. The difference between the present and the past in this connection might then be expressed by saying that marriages were then just so much more fertile than now, as the percentage of stillbirths amounted to—and that was no small matter in past centuries.

Any exact determination of the fertility of marriage in the past can, from the nature of the case, not be obtained; certainly none can be secured which is applicable from one town to another, from country to country, from century to century. This is clear, even if only because the differences due to time and place, though probably less than now, were yet important. So much can be stated as a result of the scattered data which are at our disposal, that *the number of births per marriage was greater, rather than less, about the year* 1700 *than about the year* 1900.

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[10] *Süssmilch, loc. cit.*, I, p. 167 *et seq.* and tabular appendices. *Cf.* for Sweden *De förstra officiela relationerna*, &c., p. 87, "Relation between legitimate children and married couples 40 of 10, or 400 per cent." That we are here by births to understand baptisms is seen by reference to p. 18 of the work. As to the figures for each year from 1749-57, *cf. Relationen af 1761*, pp. 72 and 87. The fact that in Germany, Sweden, and elsewhere, late and abnormal marriages (young men with widows, &c.) were known as well as in Denmark, is proved from the works here cited and the complaints found in them on this head: the application of the statistics of foreign countries to the Danish case is not, then, interfered with on this account. It is another matter that such an application is a necessity of the case—till better days and a rational collection of the material contained in the church registers can throw light on the matter from Danish sources.

But that this should be the case indicates that formerly the fertility of marriage was far greater than now. For we must not forget that marriages were then of far shorter duration. In certain sections of the population (and, consequently, on the average) marriage took place far later in life than now: in part for this reason; in part—nay, especially—because the mortality, no small part of which was due to the risks of childbirth, was far greater a couple of hundred years since than it now is, so that the marriages of that date began later and ended earlier, which was especially true of the re-marriages, in which former times were so fruitful; the marriages of distant generations had a markedly shorter duration than those of the present time. The fact that, in spite of this, the number of births to a marriage was at least as great as now-a-days, indicates a degree of fertility in those marriages, apart from the economic situation of the household or the wife's hygienic condition, which is markedly different from the facts of our day.[11]

We have now completed two of the stages of our investigation, and arrived at the result that both the marriage-rate and the fertility of marriage may be taken to have been rather higher than lower in past times than in the present. There remains still the question as to illegitimate births. Were these more numerous formerly than they now are?

On this question I shall say briefly that I regard it as impossible to give to it a direct answer of a statistical kind. I long ago developed, in my essay of 1882 (Sect. IV) the reasons for this. There it was found that, for the parish of Our Lady (Vor Frue Sogn), in Copenhagen, the number of illegitimate births amounted to 14·9 per cent. of the legitimate births in 1651-69; to 6·5 per cent. in 1670-89; to 6·5 per cent. in 1690—1709; and to 3·7 per cent. in 1710-29. This appears to indicate a great reduction in the extent of irregular sexual intercourse; but in the same period the number of procured abortions, and of secret confinements, with subsequent destruction of the infant in one way or other, was markedly on the increase, and it was in part to overcome this evil that the Foundling Hospital (Hittebörnsstiftelsen) was established in 1759.[12]

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[11] In respect of the shorter duration of marriage in former times, reference may be made to my calculation in *Historisk Tidsskrift*, 7th series, I, pp. 218 and 219. [Review of Dr. Bang's *Essay on the Nobility*]: and as to the greater number of children to a marriage, spite of their short duration, see in part the same, in part *Historisk Tidsskrift*, 7th series, II, p. 113 (my review of Professor Fahlbeck's work on *The Nobility*.) What influence the duration of marriages has on their fertility is shown in Rubin and Westergaard's *Aegteskabs-statistik*, p. 80.

[12] The untrustworthy character of the figures of illegitimacy may perhaps be best shown by the fact that the percentage of illegitimate births relatively to legitimate in "the garrison" are stated as follows: for the year 1712 (the year after the plague year) 47·5, then for 1713-15, 29·4; for 1716-18, 10·0; for 1719-21,

Naturally there have been in byegone days, just as in our own, ups and downs in this matter, according to the position attained as to morality and custom; but I take it for granted that, even as we cannot take the scattered positive information as to the number of stillborn as useful matter—for these figures themselves make it clear that the stillbirths were simply not recorded—just so too we dare not take the numbers of illegitimate children baptised in comparison with the legitimate as an accurate expression of the relation between births in and out of wedlock. In other words, a certain proportion must be added to the legitimate children baptised to represent legitimate stillbirths; the same proportionate addition must be made to the illegitimates, but it must not be overlooked that the figure thus obtained omits a certain number, not merely because stillbirths always (now, as well as at other times) occur more frequently when the offspring is illegitimate than when it is legitimate, but also because illegitimate children are simply got rid of, an occurrence which may be supposed to have happened with especial frequency at the periods when the church registers show a markedly small number of illegitimate births. When, then, we have the figures for the baptisms of legitimate and of illegitimate children, and increase both in the same proportion—for example, in that proportion given by the earliest reliable records of the nineteenth century, we can only take the result as a minimum limit for the number of births. This is already a likely result, since there must quite certainly have been some defects in the records of the old church registers touching baptisms (and deaths), so that they can only be regarded as approximately complete. The conclusion is that, when we start from the position that the birth-rate in former times was more probably above than below its present level, and therefore multiply the number of births with a small multiplier to deduce from it the number of the total population, we are more likely to arrive at a population estimate which is too low than at one which is too high. The number of births is a minimum figure, and when we multiply it by a small multiplier the two factors must give a product which errs rather in defect. On the other hand, any fear that the birth-rate we have employed is not high enough may be

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3·4; for 1722-24, 2·8; for 1727-29 (information for 1725 and 1726 is lacking), 8·7. See *Historisk Tidsskrift, loc. cit.*, pp. 522 and 523, and 542—47. With the data in that paper as to child-murder, &c., *cf.* the statement in the Swedish *Relationer*, that in the years 1749-56 the number of "qwafde barn" (*i.e.*, abortions procured) in Sweden amounted in all to 5,345! But, the statement continues, "it is probable that the number thus destroyed was greater than that above stated." To these must be added 92 children murdered in the same period, or ten yearly. "That no more than ten murders occurred, is an evidence of good political conditions restraining this evil as compared with earlier times." (*Relationerne*, &c., pp. 123 and 124.) In addition there are recorded for these nine years—not including deaths from small-pox, whooping cough, &c.—89,001, "okiãnd barnsiñka" (deaths of children from unknown causes), (about one-ninth of the births.) Any great degree of trustworthiness in the statistics of causes of death in those times one cannot venture to look for, and least of all when they are concerned with or touch upon the region of criminality.

dismissed by the consideration that if the one factor of the product is too high, the other factor, the number of births, is too low, and there is a probability that the errors will compensate one another.

When I assume that the number of illegitimate births was high in past times, I do so, among other reasons, because—as above mentioned—so large a part of the masses of the people could only marry quite late in life. Where the possibility of marriage comes late, there will be, under otherwise similar conditions, many illegitimate children. It is, by the nature of the case, unable to be positively proved for the people of past times; it is only possible to refer generally to the fact that where many soldiers and numerous domestics, &c., are found, there has also been found much immorality.[13] In reference to the present I adduce the following data:

The figures of illegitimate births, in proportion to the legitimate, are, as is known, very various for the various sections of the country. A great deal depends upon the customs and *morale* of the population, but great importance attaches to the question—nay more, it is in a way the determining factor—whether women marry young—for as married women they do not give birth to illegitimate children—or whether this is not the case. The examination of this point can be made in full detail, but, as we have had no general census since 1890, and as it is only a question of illustrating the point under consideration, not of setting forth a discussion as to the illegitimate birth-rate in Denmark at the present time, I shall content myself with illustrating the question from the point of view suggested in the inquiry: How many of the wives who give birth to children in each section of the country are under 25 years of age, and how many unmarried women give birth to children in proportion to the married women who become mothers in the same district: the figures being those for the quinquennium 1890-94? I need not repeat that for any complete, not to speak of an exhaustive, treatment of the matter the inquiry should be broader and more rational (the number of unmarried women who become mothers in each age-group in proportion to the total unmarried women in the group, &c.), but, as I have said, there is no new material to hand for our purpose, and the following will amply meet the needs of the case:—

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[13] See among other sources, *1807-14*, second chapter.

Table VI.—1890-94.

		1 Number of Married Women who become Mothers.	2 The Number per 1,000 of those in 1 who were under 25 Years of Age.	3 To every 1,000 of those in 1 there were Unmarried Mothers.
I.	Denmark	308,105	163	104
II.	Copenhagen	41,444	179	264
	Western and Mid-Jutland	55,255	148	48
III.	Funen	32,466	145	109
	East Jutland	90,564	158	91
	Bornholm	5,132	171	89
	Lolland and Falster	12,828	172	88
	Zealand (omitting Copenhagen)	70,416	183	74

The second section of the preceding table (II) comprises the two extremes, Copenhagen and Western and Mid-Jutland (Ribe, Ringkóbing, Thisted and Viborg counties). The two figures of the second and third columns are clearly determined chiefly by the exceptional artificial conditions of the capital—with its lying-in hospital—and by the exceptional natural conditions of heath, and sand, and sea, which have determined, one may perhaps say, the thoughts and feelings of the people of Mid and West Jutland. But if we turn now to the inland population (III) and include with these East Jutland (Vejle, Aarhus, Randers, Aalborg, and Hjórring counties), we see that the table gives a clear expression to the following statement: *the more married women under* 25, *the fewer the mothers of bastards.*

In opposition to this it cannot be maintained that the existence of many unmarried mothers is precisely the reason why there are few married—on the ground that unmarried women who have children find it more difficult to become wives—for the unmarried mother will, in fact, often get married to the father of her child; and it is therefore of real importance to observe that if there had been in Funen as high a percentage of married women under 25 years of age as in Zealand (excluding Copenhagen), this increase in their number, 38 per thousand, would have been greater than the actual excess of unmarried mothers in Funen over the proportion found in Zealand, namely, 35 per thousand. If we add the figures of Col. 3 to the corresponding figures of Col. 2, we find that to every 1,000 married women who bore children, the number of these under 25 years of age + the number of unmarried women who bore children amounted to the following figures:—

Funen	254	Lolland and Falster	260
East Jutland	249	Zealand (excluding Copenhagen)	257
Bornholm	260		

The proportionate figure is, therefore, everywhere about 25 or 26 per cent., and differences practically disappear. Now it is self-evident that other influences might be of importance, and also that the figures themselves may be somewhat deceptive; for it is, of course, very far from being clear that an increase of the number of married mothers under the age of 25 would have resulted in a *precisely corresponding* decrease of unmarried mothers. And, further, the uniformity we have shown only holds good when we take, as above, large sections of the country together; whereas if we take the counties separately, there are found to be variations of considerable importance. On the last point, however, it is still possible that the regularity of the table would again appear if the hundreds and parishes, &c., were grouped in the order of the numbers of married and unmarried mothers recorded in them. There is, in any case, an obvious connection, which is very easily to be understood in itself, between the opportunities afforded for the begetting of children outside the bonds of matrimony, by the prevalence of celibacy, and the frequency of the occurrence. *Our table shows, beyond a doubt, that late marriage favours illegitimacy, and the converse.*

Alongside these modern Danish statistics I shall set the proportion between illegitimate and legitimate births found in that country, which has been before referred to as that which has taken the most extreme course in relation to the erection of legal barriers to marriage, namely, Bavaria. No really important modification of these barriers was made until the law of 16th April, 1868, and the effect of this is shown by the following summary.

In each 10,000 births there were illegitimate—

1826	2,050	1859	2,357
'36	2,107	'62	2,250
'46	2,054	'65	2,250
'56	2,114		

In the very year of the new legislation, 1868, the influence of the change is to be seen—a likely result indeed, since irregular unions could at once be made regular, and we have from that time the following figures in continuation of those just given:—

1868	1,997	1896	1,406
'71	1,520	'97	1,394
'91	1,409	'98	1,361

The change in the law has thus resulted in a reduction from some 23 or 24 per cent. to between 13 and 14 per cent. of illegitimate births. Even this last is a high figure, and shows to-day the effects of the still existing obstacles to matrimony; but the contrast between every fourth birth (approximately) being illegitimate, and that being the case for 1 in every 7 or 8, is unusually great, and the operation of the law is thus made in a high degree capable of being grasped numerically.[14]

The somewhat more advanced age to which it was compulsory on certain sections of the community to defer marriage in bygone centuries, neither caused the number of marriages to be smaller, nor the fertility of marriage to be less, than in our time, but it cannot but have had some influence in increasing the number of illegitimate births.

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[14] Statistisches Jahrbuch für das Königreich Bayern. (Years 1897 and 1899.)

III.

The question now presents itself, what result a high birth-rate, combined with a death-rate greater still, produced in the age-distribution of the population? Quite generally it may be remarked that a large birth-rate will crowd the age-groups corresponding to childhood comparatively to what would result from a small birth-rate. It is also clear that, when the adults produce a numerous offspring, the latter will, other things being equal, constitute a larger proportion of the whole population than if it were less numerous. Therefore we find that, in spite of the extensive immigration of adults to the United States of North America, the ages of childhood are, as a result of the high birth-rate, very strongly represented in that country; the age-group 0—10 includes (1880) 267 per 1,000 of the population. In Germany, too, we find a high birth-rate, though less than that of America, but there is associated with it, on the other hand, a considerable emigration of adult persons, so that the age-group under 10 years of age includes (1890) 242 per 1,000 of the whole population. But the corresponding figure for France is (1891) 175 per 1,000.[15]

Suppose, now, that we have two successive periods, with about equal birth-rates, but with different death-rates—a difference which will specially affect the mortality of children, and, after them, of the aged; then the first period with the higher child mortality will have a relatively smaller number at the younger ages than the other. In this second period the population will, on the one side, include relatively more children, on the other, relatively fewer adults, since the proportionate number for the adults is influenced by the relatively small number of children existing in the preceding period from whom the supply of adults for the second period is derived. The adults may be in turn divided into age-groups, corresponding respectively to the productive period of life and to old age. With a reduced death-rate the latter groups will be swollen, the former relatively thin, so that the productive age-groups, both because of meagre recruiting from the previous period, and also because of the current rapid increase of children and of aged, will for a time include a comparatively slight part of the aggregate population. This state of things continues until the more numerous children in due course develop into the productive age-group, which, meanwhile, on account of its small numbers, will have had relatively few children; and thus their section of the population increases in its turn, and so on, and so on.

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[15] In France the population under 20 years of age is stated to have amounted to 447 per 1,000 of the aggregate population in 1791, to 361 per 1,000 in 1851, and to 350 per 1,000 in 1891—results of the rapidly decreasing birth-rate (*cf. inter alia*, Mayr, *Statistik und Gesellschaftslehre*, II, Freiburg i B., 1897, pp. 84 *seq.;* also the article, "Altersgliederung" in the second edition of the *Handwörterbuch d. Staatswissenschaften.*

Finally, the figures are affected by migration, which swells the productive classes in those countries which have a net immigration, reduces them in the countries with a net emigration, and *vice versâ* with respect to the other age-groups. All these conditions are involved with each other, and, into the bargain, with changing birth-, and death-, and migration-rates, so that a deduction of the whole series of resulting changes in age-distribution will be, as a rule, in the extreme difficult and problematical as to its outcome. Yet certain strongly marked phenomena of births, deaths, or migration will leave their traces from census to census in recognisable form; and, in regard to periods with markedly different intensities of one or other of these, it will be comparatively easy to indicate broadly the results on the age-distribution of the people. This we shall attempt to do with the help of the data which follow.

The age-distributions at the censuses of 1787 and 1801, and at the two last censuses of the nineteenth century in Denmark, are shown in the following summary:—

TABLE VII.

	Census 1787.		Census 1801.		Census 1880.		Census 1890.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Aggregate numbers	416,195	423,850	458,683	466,997	967,360	1,001,679	1,059,157	1,113,223
Of these per 1,000 were at ages—								
0—20...............	408·1	400·6	408·6	402·6	439·6	416·2	453·4	423·4
20—40...............	310·0	306·8	293·5	295·3	280·7	289·3	270·2	285·0
40—60...............	201·8	199·5	209·4	202·9	190·4	192·4	180·2	183·8
60 and over	80·1	93·1	88·5	99·2	89·3	102·1	96·2	107·8
	1000·0	1000·0	1000·0	1000·0	1000·0	1000·0	1000·0	1000·0

It will be seen from this table that, at all four censuses, the population under 20 years of age in each of the sexes included something over two-fifths of the whole: for both sexes together it amounted to 404·3 per 1000 in 1787, rising from census to census to 438·1 per 1,000 in 1890.

As to this difference between 1787 and 1890, may it not, one may ask, first and foremost, be attributed to the deficiencies in the enumeration of 1787? The census of that year, like the first census of 1769, took place in the summer, while all the censuses of the nineteenth century have been taken in the month of February, and it may be supposed that, both for this and other reasons, it was incomplete. But while the deficiencies of a modern census are especially such as affect the ages of childhood, it was formerly equally probable that adults were not included in the enumeration, because they feared that it had some connection with military service, or the imposition of taxation, and therefore sought to avoid being included. The deficiencies in a census taken in the summer will be, also, rather of adults than of children, and, lastly, we find that in 1801 the population under 20 years of age amounted to 405·6 per 1.000 of the whole, only a triflingly higher proportion than in 1787; and the census of 1801 is counted as a "modern," a complete, census.

The cause of the change in the age-distribution must lie, then, in the "movements of the population" themselves. But the birth-rate in the last third of the eighteenth century was, as we shall shortly see, greater than now-a-days, so that the cause of the small proportion of young people cannot be sought on that side: but, on the other hand, the very considerable mortality of the time (*cf.* below) had an important bearing on the matter. A further consideration is found in the fact that, in the years preceding the censuses of 1880 and 1890, there was a considerable excess of emigration from the country, while in the concluding decades of the eighteenth century, it may be assumed that there was an excess of immigration. The combination of a high death-rate among children, thinning out the younger age-groups, and an excess of immigration, swelling the number of adults, must give a small proportionate figure for the former, a large one for the latter, in the eighteenth century's censuses: while precisely reversed conditions give reversed results in the last censuses of the nineteenth century.

The relatively numerous population between the ages of 20 and 60 at the census of 1787 is evidenced once more in the high figures for those over 40 years of age at the census of 1801. Partly for this reason, partly because the ages under 20 are but feebly represented in 1787, we find a lower percentage at the ages 20 to 40 in 1801 than in 1787, and it would certainly have been even lower but for the influence of immigration.

Grouping together the productive ages in the four censuses previously considered, *i.e.*, the ages 20 to 60, we obtain the following summary:—

Ages.	Of every 1,000 Males.				Of every 1,000 Females.			
	1787.	1801.	1880.	1890.	1787.	1801.	1880.	1890.
0—20........	408	409	440	454	401	403	416	423
20—60........	512	503	471	450	506	498	482	469
60 and over	80	88	89	96	93	99	102	108
	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Thus the section of the population which belongs to the productive period of life diminished by one-eighth for males, one-fourteenth for females, between 1787 and 1890; the proportion of the juveniles (ages under 20) increased by one-ninth and one-eighteenth respectively; and that of the old (ages 60 and over) increased by one-fifth for men and one-sixth for women. The causes are:—a much higher death-rate among children at the close of the eighteenth century than at the close of the nineteenth, hence fewer children; next a shorter duration of life for adults in the last than in the present century, hence fewer old people; and further, an excess of immigration in the eighteenth century's concluding generation, an excess of emigration in the nineteenth, in both cases affecting males especially, hence more at productive ages in the former than in the latter period: finally, the mutual influences on each other of all the three causes which have together resulted in the development in question.

There remains for consideration the question, how great was the birth-rate in the last third of the eighteenth century? The information available affords the following data:—

Denmark.

Average of Years.	Births.	Deaths.
1769–86	26,405	25,010
1787—1800............	27,862	24,169

In consideration of the nature of the records of births and deaths of that time, I am of opinion that these figures must be increased by at least one-sixteenth if we desire to obtain figures comparable with the records of births and deaths for our own time, including stillborn in both, and the resulting figures are:—

	Birth-rate per 1,000.	Death-rate per 1,000.	Excess of Births over Deaths per 1,000.
1769–87	33·0	31·3	1·7
1787–1801	33·1	28·7	4·4

For the whole period, then, we find a birth-rate of about 33 against the 31 of our time, and a death-rate of about 30 against the 17 of our time (in all, including stillborn), or a natural increase of 3 per 1,000 against 14 per 1,000. To attempt to use the figures of mortality as the basis of a computation of the population is evidently, in the light of these figures alone, a vain enterprise. The death-rate of 1769-87 was one-tenth greater than that of 1787-1801, and from year to year underwent the most sudden variations. The mortality of our time has been reduced to little more than the half of what it was in 1769-87. The birth-rates throughout are much more nearly the same. If we multiply the above-recorded totals of births for each of the two periods 1769-1787 and 1787-1801 by 30 (without making the preliminary addition of one-sixteenth, *cf.* the essay of 1882), we obtain two totals for the mean population which fall a good 7 per cent. below the figures previously given, and the difference between the result of the census of 1769 and the population now accepted for that date (785,000 against 835,000) is 6½ per cent.!

It is, then, well worth while, even though involving some risk of substantial inaccuracy, to compute the numbers of the population in former times from that of the births (baptisms)—how delighted should we not be, in the periods when there was no census, for even such an uncorrected enumeration as that of 1769—and we shall hardly obtain a result better than that which is given by multiplying the number of baptised by about 30, a result which may be in error by as much as one-tenth on either side. But even if we do not enter on a computation of the population, it is of great importance, on social and other grounds, to secure the figures of marriages, births, and deaths for as long a period of time and with as great precision as is possible. With regard to the "movements of population," I am of opinion that every new investigation will give new support to the view that people, as a general rule, married as early as law and custom allowed, and brought children into the world without restraint, but that the increase of population was small because of the high mortality. Even if at some periods the population did grow in numbers, a sudden plague swept away the accumulations of decades. The scriptural command to "be fruitful and multiply and replenish the earth," was fulfilled so far as the being fruitful was concerned, but countries did not become populous. It was precisely this—to be born only to a miserable life and an early death—which was the object of Malthus' attacks.

Since Malthus' time, however, Europe has been the field of strange experiences. From the year 1800 to the year 1900, the population of our quarter of the globe has increased from about 187 to about 400 millions, and a further 25 to 30 millions of people have gone to distant quarters of the globe, where their offspring is credited to those countries to which they have gone. In Eastern Europe the birth-rate has, throughout the century, remained in the neighbourhood of 45 to 47 per 1,000, while the death-rate has steadily decreased. In Western Europe, too, the death-rate is steadily and rapidly diminishing; but there, in the course of the last generation, the birth-rate also is on the wane. Since the beginning of the seventies—contemporaneously, therefore, with a marked improvement in the economic condition of the people—it has fallen from 34·3 per 1,000 (living births) to 31·3 per 1,000, a difference which represents 700,000 births per annum in the Western Europe of to-day! As to causes and as to effects, this fact can be regarded both as a good and as an evil, but it is at any rate a phenomenon of the present,—one which was not manifested in the past.

II.—*On Life-Tables: their Construction and Practical Application.*[16]

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During the interval which has elapsed since the paper below alluded to was written, some further work at the subject has been done, and it may be of interest to at least a limited number of the readers of the *Journal* to have this recorded.

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[16] This paper is an addendum to that published in the *Journal*, September and December, 1899, vol. lxii, pp. 443 and 683.—Ed.

It may be thus summarised :—

(*a.*) Many other experimental calculations have been made to find out whether the scheme, the final form of which is given in Section III, on pp. 694 and 695, could be improved upon. The practical result of these has been to confirm what has been already written.

(*b.*) Some of these calculations have been directed to ascertaining what differences in the p_x curve from p_5 to p_{25} are produced by including or excluding the term u_{20}, that is, using the data for the age-groups 15—20 and 20—25 separately, or combined in one age-group as 15—25.

The conclusion arrived at has been that a more rational curve is to be obtained *without* u_{20}; did space permit, this conclusion could be adequately supported by comparative numerical tables and diagrams.

(*c.*) The formula for $\delta^2 u_0$ from the series $u_4, u_5, u_{10} \ldots, u_{45}$ given on p. 695, has been worked out in a more correct form as follows :—

$$\delta^2 u_0 = +\frac{1}{3}u_4 - 0{\cdot}4u_5 + \frac{0{\cdot}2}{3}u_{10} - \frac{4}{3}\delta^3 u_0 - \delta^4 u_0 - 0{\cdot}4\delta^5 u_0 - \frac{0{\cdot}2}{3}\delta^6 u_0.$$

However, the formula given previously arrives at exactly the same result.

(*d.*) The checking equation given on p. 695 for u_{11} (*i.e.*, u_{15}) is not an efficient safeguard against error.

It is necessary to take the equation for the *last* term of the series being dealt with. Thus—

$$u_{41}\ (i.e.,\ u_{45}) = u_0\ (i.e.,\ u_4) + 41\delta u_0 + 820\delta^2 u_0 + 10{,}660\delta^3 u_0 \\ + 101{,}270\delta^4 u_0 + 749{,}398\delta^5 u_0 + 4{,}496{,}388\delta^6 u_0.$$

(*e.*) The scheme of constructing an extended Life-Table described in the original paper, and to which the preceding brief notes relate, is based on the idea of interpolating a continuous series of u_x values in two initial series, which are respectively the logs. of the numbers representing, Population + $\frac{1}{2}$ deaths and Population — $\frac{1}{2}$ deaths at age x and upwards, and then, by translating the logs. into numbers and differencing, the numerators and denominators of the fractions expressing the chance of living from age x to age $x+1$ are readily obtained for each successive year of life, so that all throughout, from age 5 onwards, U_x being used to denote $P + \frac{1}{2}d$ at age x and upwards, and u_x, $P - \frac{1}{2}d$ at age x and upwards,

$$p_x = \frac{u_x - u_{x+1}}{U_x - U_{x+1}}.$$

This method has the advantages :—

(1.) That as the sums of the yearly subdivisions of the 5-yearly or 10-yearly age-groups exactly equal the whole numbers belonging to the respective age-groups, a very exact and accurate expression is arrived at of the mortality-curve indicated by the data recorded.

(2.) That it affords such opportunities and necessities for continual checking and self-correction in the processes of calculation, as to render any very glaring error or want of symmetry in the p_x curve almost impossible.

On the other hand it has the disadvantage that a *double* series of interpolations will be required all throughout, which entails a great amount of arithmetical labour.

One chief object of the further work done has been to find out whether practically the same p_x curve could not be obtained by *one* set of interpolations in a series of p_x values first obtained, and thus the labour of calculation be much diminished.

The ingenious application of the differential calculus to Life-Table construction devised by Mr. A. C. Waters, seemed to offer the best line to work upon, and with some modifications of the original method, directed to the obtaining of a rational p_x curve from p_5 to p_{25}, it has been found to give the desired results, so that practically, with but insignificant variations, a p_x curve can be worked out similar to that obtained by the other method, and consequently the E_x values will be almost identical.

The chief object of this communication, therefore, comes under the following heading:—

Description of an application of the differential calculus to the obtaining of a series of p_x values which will form the framework of an extended Life-Table.

It is, of course, outside the scope of this short paper to attempt to make the principles of the differential calculus clear to those who have no previous knowledge of them, but it may be appropriate to give such brief explanations as shall be of service to those who may possess some elementary knowledge of the calculus, by way of connecting theory with practice.

At the same time it is hoped that sufficiently clear explanations will be given to make it quite possible to work out the arithmetic of the formulæ without necessarily following the mode by which they have been worked out.

If $\phi(x)$ represent Population plus half deaths at age x and upwards ($P + \frac{1}{2}d$, or more conveniently, $2P + d$); and if $\psi(x)$ similarly represent Population minus half deaths at age x and upwards ($P - \frac{1}{2}d$, or $2P - d$), then the numbers corresponding to any age-period x to $x + h$ years will be represented respectively by $\phi(x) - \phi(x + h)$, and $\psi(x) - \psi(x + h)$, and the mean probability of living a year in the age-group x to $x + h$ will be represented by the fraction—

$$\frac{\psi(x) - \psi(x + h)}{\phi(x) - \phi(x + h)}.$$

By changing all the signs, and dividing both the numerator and denominator by h, this fraction becomes—

$$\frac{\dfrac{\psi(x + h) - \psi(x)}{h}}{\dfrac{\phi(x + h) - \phi(x)}{h}}.$$

This is true for any value of h, no matter how large or how small; we may therefore suppose h to become smaller without limit, until finally the last expression becomes $\frac{\psi'(x)}{\phi'(x)}$, when h vanishes, *i.e.*, at the age-group x to $x + h$ when $h = 0$, or at the *exact moment* of age x.

Therefore $\frac{\psi'(x)}{\phi'(x)}$ may be taken as *approximately* the probability of living a year in any small age-group of which x is the centre, say in the age-group $x - \frac{1}{2}$ to $x + \frac{1}{2}$.

The problem, therefore, of calculating p_x by the differential calculus resolves itself into determining the values of $\phi'(x)$ and $\psi'(x)$; but before this can be done the *form* of the functions ϕ and ψ must be fixed.

The data which we have to work from are, as in the method previously described, the logs. of the numbers expressing $2P + d$ and $2P - d$ at certain given ages and upwards.

Let log. $\phi(x)$ be indicated by U_x, and log. $\psi(x)$ by u_x, the series of given values of x being 4, 5, 10, 15 .... 85.

It may be assumed that these values of U_x, or u_x are capable of being interpolated for intermediate ages or values of x, by the method of finite differences.

This implies that $Ux = A + Bx + Cx^2 + Dx^3$ .... &c., the values of the constant coefficients A, B, C, &c., depending in each case upon the quantities dealt with, and the number of coefficients depending on the number of terms taken in the series.

Whatever number of orders of differences "n" we choose to take will require $n + 1$ terms in the series to determine the function, and the highest power of x will be x^n.

Since common log. $\phi(x) = A + Bx + Cx^2 + Dx^3 + \ldots.$

$\phi(x) = 10^{A + Bx + Cx^2 + Dx^3 + \ldots}$

Now, when this is the form of the function ϕ, it can be shown that

$$\phi'(x) = 10^{A + Bx + Cx^2 + Dx^3 + \ldots} \times \log_e 10 \times (B + 2Cx + 3Dx^2 + \ldots),$$

which may be written

$$\phi'(x) = \phi(x) \,.\, \log_e 10 \,.\, (B + 2Cx + 3Dx^2 + \ldots);$$

similarly let log. $\psi(x) = a + bx + cx^2 + dx^3 + \ldots,$

then

$$\frac{\psi'(x)}{\phi'(x)} = \frac{\psi(x)}{\phi(x)} \cdot \frac{b + 2cx + 3dx^2 + \ldots}{B + 2Cx + 3Dx^2 + \ldots}$$

($\log_e 10$ being cancelled out).

It would entail considerable labour to work out the values of all the coefficients B, C, D, b, c, d, &c., but when $x = 0$ it is obvious that

$$\frac{\psi'(x)}{\phi'(x)} = \frac{\psi(0)}{\phi(0)} \cdot \frac{b}{B},$$

$$\therefore \quad p_0 = \frac{b\psi(0)}{B\phi(0)},$$

and $$\log. p_0 = (\log. b + u_0) - (\log. B + U_0).$$

By taking five terms in a series equidistant at ten-yearly intervals, say u_5, u_{15}, u_{25}, u_{35}, u_{45}, and making the central term u_0, we have the series u_{-20}. u_{-10}. u_0, u_{10}, u_{20}.

The simple device, therefore, of making the central term of the series u_0, facilitates the calculation by making it only necessary to work out the values of b and B.

To this the problem is now narrowed.

Since we have the following series of five equations—

$$\begin{aligned} u_{-20} &= a - 20\,b + 400\,c - 8{,}000\,d + 160{,}000\,e, \\ u_{-10} &= a - 10\,b + 100\,c - 1{,}000\,d + 10{,}000\,e, \\ u_0 &= a \\ u_{10} &= a + 10\,b + 100\,c + 1{,}000\,d + 10{,}000\,e, \\ u_{20} &= a + 20\,b + 400\,c + 8{,}000\,d + 160{,}000\,e, \end{aligned}$$

by successive differencing it is easy to show that

$$b = \frac{8(u_{10} - u_{-10}) - (u_{20} - u_{-20})}{120},$$

or, changing all the signs,

$$-b = \frac{8(u_{-10} - u_{10}) - (u_{-20} - u_{20})}{120}.$$

It is obvious of course that $\dfrac{-b}{-\mathrm{B}} = \dfrac{b}{\mathrm{B}}$.

Therefore when 0 represents the age 25,

$$\frac{\psi'(25)}{\phi'(25)} = \frac{\psi(25)}{\phi(25)} \cdot \frac{b}{\mathrm{B}} = \frac{\psi(25)}{\phi(25)} \cdot \frac{8(u_{15} - u_{35}) - (u_5 - u_{45})}{8(\mathrm{U}_{15} - \mathrm{U}_{35}) - (\mathrm{U}_5 - \mathrm{U}_{45})}.$$

Thus, for example,

Log. (P − ½d) = log. ψ.	Log. (P + ½d) = log. ϕ.
u_5 = 6·3608547	U_5 = 6·3682838
u_{15} = 6·2285900	U_{15} = 6·2377626
u_{25} = 6·0690604	U_{25} = 6·0810820
u_{35} = 5·8634924	U_{35} = 5·8798347
u_{45} = 5·6016418	U_{45} = 5·6243759

From these data

$$\frac{b}{\mathrm{B}} = \frac{8(u_{15} - u_{35}) - (u_5 - u_{45})}{8(\mathrm{U}_{15} - \mathrm{U}_{35}) - (\mathrm{U}_5 - \mathrm{U}_{45})} = \frac{2·1615679}{2·1195153},$$

$$\therefore p_{25} = \frac{\psi(25)}{\phi\ (25)} \times \frac{2·1615679}{2·1195153}.$$

and

$$\log.\ p_{25} = (6·0690604 + 0·3347689) - (6·0810820 + 0·3262365) = \bar{1}·9965108.$$

Similarly, by making u_{35}, u_{45}, u_{55}, and u_{65} centres of series, it is easy to calculate the logs. of p_{35} . . . p_{65}. For p_{75} we need a further term than the data provide, viz., u_{95}, and for p_{85} two further terms, viz., u_{95} and u_{105}.

These additional terms can easily be obtained by carrying downwards the differences of the series u_{45}, u_{55}, u_{65}, u_{75}, u_{85}.

The scheme for the calculation of $p_{25} \ldots p_{85}$ is therefore represented thus:—

u_{-20}.	u_{-10}.	u_0.	u_{10}.	u_{20}.
u_5	u_{15}	u_{25}	u_{35}	u_{45}
u_{15}	u_{25}	u_{35}	u_{45}	u_{55}
u_{25}	u_{35}	u_{45}	u_{55}	u_{65}
u_{35}	u_{45}	u_{55}	u_{65}	u_{75}
u_{45}	u_{55}	u_{65}	u_{75}	u_{85}
u_{55}	u_{65}	u_{75}	u_{85}	u_{95}
u_{65}	u_{75}	u_{85}	u_{95}	u_{105}

Up to this point the methods of calculation set down and explained have been those originally devised by Mr. A. C. Waters, to whose personal teaching I am indebted for the knowledge of them.

For the further application of the method to obtaining p_5, p_{10}, and p_{15} I am myself responsible.

It has been the outcome of a great amount of experimental work, the details of which it would be tedious to recapitulate.

For p_{25} and onwards it has been found amply sufficient to take four orders of differences, as by this means for each age taken as a central point, the p_x value has been determined with reference to the facts for twenty years before and twenty years after.

However, at ages 5, 10, and 15 the ten-yearly intervals are too great, and in order to get satisfactory and rational values of p_5, p_{10}, and p_{15} it is necessary to bring in u_4 at the beginning of the series, together with u_{10} in its place, and to carry the series as far at least as u_{35}.

In fact, after trying almost endless combinations, more simple as well as much more difficult, it has been found that p_5, p_{10}, p_{15} are best obtained from the series u_4, u_5, u_{10}, u_{15}, u_{25}, u_{35}, thus making a five-difference function. This implies that in this series u_5, u_{10}, and u_{15} are in turn to be taken as u_0.

There are at least three ways in which the calculation of the coefficient B can be made, (1) by means of a symmetrical formula with u_0 as the central term; (2) in terms of the differences of any six consecutive equidistant u_x values in the series; and (3) directly in terms of the given series of u_x values.

(1.) By means of Lagrange's formula the terms u_{20} and u_{30} may be interlpolated in the series u_4, u_5, u_{10}, u_{15}, u_{25}, u_{35}. When this is done we shall have the consecutive equidistant series u_5, u_{10}, u_{15}, u_{20}, u_{25}, u_{30}.

If this series be differenced,[17] and the differences carried *down* one stage, u_{35} will be arrived at; and it will at once be seen whether the interpolated terms u_{20} and u_{30} have been correctly calculated. If they be found to be correct, the differences can be readily carried *upwards* three stages, and thus the hypothetical terms u_0, u_{-5}, and u_{-10} are arrived at.

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[17] See vol. lxii, part iii, p. 452.

The data are now provided for making u_5, u_{10}, and u_{15} in succession the centres of seven terms, and thus getting a formula for b in terms of $(u_{-15} - u_{15})$, $(u_{-10} - u_{10})$, and $(u_{-5} - u_5)$.

The following is a tabular representation of the scheme:—

u_{-15}.	u_{-10}.	u_{-5}.	u_0.	u_5.	u_{10}.	u_{15}.
u_{-10}	u_{-5}	u_0	u_5	u_{10}	u_{15}	u_{20}
u_{-5}	u_0	u_5	u_{10}	u_{15}	u_{20}	u_{25}
u_0	u_5	u_{10}	u_{15}	u_{20}	u_{25}	u_{30}

The requisite formulæ are as follows:—

$$(1.)\ u_{20} = \left(\frac{-31{,}250u_4 - 38{,}192u_{10} + 39{,}060u_{15} + 6.820u_{25} - 308u_{35}}{23{,}870}\right) + 2u_5.$$

$$(2.)\ u_{30} = \frac{+312{,}500u_4 - 465{,}465u_5 + 310{,}310u_{10} - 211{,}575u_{15} + 110{,}825u_{25} + 15{,}015u_{35}}{71{,}610}.$$

(These formulæ must be worked out to six extra places of decimals.)

$$(3.)\text{—}b = \frac{45(u_{-5} - u_5) - 9(u_{-10} - u_{10}) + (u_{-15} - u_{15})}{300}.$$

(2.) In the process of proving the accuracy of the interpolated terms, u_{20} and u_{30}, a tabular representation of the differences (Δ to Δ^5) of the six consecutive equidistant terms u_5, u_{10}, u_{15}, u_{20}, u_{25}, u_{30}, will have been obtained, and as these differences will have been carried down to u_{35} and inserted in their respective places in the table, it only remains to write down the constant Δ^5 value in the line of differences, opposite to u_{15} to have the complete lines of differences, (Δ to Δ^5) opposite to u_5, u_{10}, and u_{15} respectively.

By applying the formula given below to each of these lines of differences in succession, the coefficient B will be obtained for the series with u_5, u_{10}, and u_{15} respectively taken as u_0.

$$5\text{B} = \Delta - \tfrac{1}{2}\Delta^2 + \tfrac{1}{3}\Delta^3 - \tfrac{1}{4}\Delta^4 + \tfrac{1}{5}\Delta^5.$$

In this way the accuracy of the results obtained by the previous method may be checked.

(3.) Since having worked out the above formulæ, I have been favoured by Mr. Waters with a very ingenious deduction from Lagrange's general formula, by which it is readily possible to work out the coefficient B from *any* series by a *direct* method.

If $u_x = \text{A} + \text{B}x + \text{C}x^2 + \ldots \text{N}x^n$,

To find the coefficient B in terms of $n + 1$ given values of the function u_x,

Let the $n + 1$ values be u_0, u_a, u_b, u_c, &c.

Let Π be the continued product of the n arguments a, b, c, &c., other than zero, $= a \,.\, b \,.\, c \,.\, \ldots$ (n factors),

And let H be their harmonic sum, $= \dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c} + \ldots n$ terms,

Then B (*i.e.*, the coefficient of x in the expansion of u_x) can be shown to be equal to

$$(-1)^{n-1}\Pi\left\{\frac{u_a}{a^2(a-b)(a-c)\ldots} + \frac{u_b}{b^2(b-a)(b-c)\ldots} + \text{terms in } u_c, \text{\&c.}\right\} - \text{H}u_0.$$

This formula has made it possible to make many experimental calculations from different series which otherwise could not have been undertaken without a deterrent amount of labour.

On applying the formula to the series from which we are working, viz., u_4, u_5, u_{10}, u_{15}, u_{25}, u_{35}, it is found that

(1) When u_5 is taken as u_0,

$$b = \frac{-500{,}000u_4 + 441{,}595u_5 + 76{,}384u_{10} - 19{,}530u_{15} + 1{,}705u_{25} - 154u_{35}}{716{,}100}$$

(2) When u_{10} is taken as u_0,

$$b = \frac{+1{,}562{,}500u_4 - 2{,}685{,}375u_5 + 429{,}660u_{10} + 732{,}375u_{15} - 42{,}625u_{25} + 3{,}465u_{35}}{7{,}161{,}000}.$$

(3) When u_{15} is taken as u_0,

$$b = \frac{-500{,}000u_4 + 787{,}710u_5 - 840{,}224u_{10} + 517{,}545u_{15} + 37{,}510u_{25} - 2{,}541u_{35}}{2{,}148{,}300}.$$

In each case the sum of all the coefficients will be found to be zero.

Methods (1) and (2) used together have the great advantage of being *self-checking*.

In each of the three instances to be afterwards given the values of p_5, p_{10}, p_{15} and p_{25} have also been worked out from the series u_4, u_5, u_{10}, u_{15}, u_{25}, u_{35}, u_{45}.

The labour is of course very much more considerable than for the series ending with u_{35}. The results have not been found to very greatly differ, and on weighing the comparative results the balance is in favour of the simpler series.

By the methods above described it is possible, with but comparatively little labour, to obtain the series of p_x values p_5, p_{10}, p_{15}, p_{25}, ... p_{85}.

The next step is to proceed to interpolate a continuous series of intermediate yearly values.

At this point, for the sake of clearness, it may be well to denote these values as p'_x. *Let it be understood hereafter that* p'_x *means the chance of living from age* $x - \frac{1}{2}$ *to age* $x + \frac{1}{2}$, *while* p_x *means the chance of living from age* x *to age* $x + 1$.

The first point to be considered is, as to whether it is necessary to include in the series the p_4 value which will have been previously obtained (see vol. lxii, Part 3, pp. 451—454). This value, to be made comparable with the other values being dealt with, must be indicated as $p'_{4\frac{1}{2}}$. Therefore if we decide to take this value into the series, either formulæ must be calculated for a series $u_{4\frac{1}{2}}$, u_5, u_{10}, u_{15}, . . . &c., or a hypothetical value of p'_4 must be worked out to begin with, and then the formulæ previously given in the paper already published for the series u_4, u_5, u_{10}, u_{15}, . . . &c., will be available.

I have in two instances worked out comparative results from p'_5 to p'_{35}, and have come to the conclusion that as (a) the results obtained do not greatly differ, (b) the inclusion of $p'_{4\frac{1}{2}}$ very greatly complicates the calculation, and (c) the facts at age 4 have already been taken into account in arriving at p'_5, p'_{10}, p'_{15}, it is sufficiently accurate to work from a series beginning with u_5, u_{10}, u_{15}, . . . &c., and thus, as will be seen, we shall have very simple and easy formulæ to deal with.

The scheme of interpolation which I would propose is indicated as follows, p'_x being represented by u_x.

Series (1)........ $[u_5, \ u_{10}, \ u_{15}, \ \underline{u_{25}, \ u_{35}}], \ u_{45}, \ u_{55}.$

,, (2)........ $u_{15}, \ [u_{25}, \ u_{35}, \ \underline{u_{45}, \ u_{55}}], \ u_{65}.$

,, (3)........ $u_{25}, \ u_{35}, \ [\overline{u_{45}, \ u_{55}}, \ \underline{u_{65}}], \ u_{75}.$

,, (4)........ $u_{35}, \ u_{45}, \ [\overline{u_{55}, \ u_{65}}, \ u_{75}, \ u_{85} \ldots$

The portion of each series used is shown included in brackets, and the underlines and overlines represent that the underlined part of a series (for example u_{26} to u_{34}) is to be "welded" with the overlined part of the series below according to the method described on p. 464, vol. lxii, Part 3. It will be noted that the p'_x values between p'_{35} and p'_{45} are taken from series (2) alone.

The formulæ for the equidistant series 2, 3, and 4 have been given on p. 462 of the same volume just referred to.

The formulæ for Series (1) are as follows (u_5 being u_0)—

$$\delta^6 u_0 = +0\cdot000{,}012u_5 - \frac{0\cdot001{,}024u_{10}}{21} + 0\cdot000{,}06u_{15} - 0\cdot000{,}04u_{25}$$
$$+ 0\cdot000{,}024u_{35} - \frac{0\cdot000{,}18u_{45}}{21} + \frac{0\cdot000{,}028u_{55}}{21}.$$

$$\delta^5 u_0 = -0\cdot000{,}1u_5 + \frac{0\cdot002{,}56u_{10}}{7} - 0\cdot000{,}4u_{15} + 0\cdot000{,}2u_{25} - 0\cdot000{,}08u_{35} + \frac{0\cdot000{,}1u_{45}}{7} - 15\delta^6 u_0.$$

$$\delta^4 u_0 = +0\cdot000{,}8u_5 - 0\cdot002{,}56u_{10} + 0\cdot002{,}4u_{15} - 0\cdot000{,}8u_{25} + 0\cdot000{,}16u_{35} - 11\delta^5 u_0 - 64\cdot5\delta^6 u_0.$$

$$\delta^3 u_0 = -0\cdot006u_5 + 0\cdot016u_{10} - 0\cdot012u_{15} + 0\cdot002u_{25} - 7\cdot25\delta^4 u_0 - 28\delta^5 u_0 - 75\delta^6 u_0.$$

$$\delta^2 u_0 = +0\cdot04u_5 - 0\cdot08u_{10} + 0\cdot04u_{15} - 4\delta^3 u_0 - 8\delta^4 u_0 - 10\delta^5 u_0 - 8\cdot4\delta^6 u_0.$$

$$\delta u_0 = -0\cdot2u_5 + 0\cdot2u_{10} - 2\delta^2 u_0 - 2\delta^3 u_0 - \delta^4 u_0 - 0\cdot2\delta^5 u_0.$$

The checking equation is—

$$u_{50} \ (i.e., \ u_{55}) = u_0 \ (i.e., \ u_5) + 50\delta u_0 + 1{,}225\delta^2 u_0 + 19{,}600\delta^3 u_0$$
$$+ 230{,}300\delta^4 u_0 + 2{,}118{,}760\delta^5 u_0 + 15{,}890{,}700\delta^6 u_0.$$

In applying the above formulæ the work is diminished by subtracting u_0 (*i.e.*, u_5) from all the terms of the series, then u_5 in each formula goes out as zero, the formulæ being applied to the new terms. Thus to take the case of the p'_x values worked out from the data of the Manchester City (males) Life-Table.

	Original Terms.	New Terms after Subtracting u_0.
$u_0 = p'_5 =$	$\bar{1}\cdot9936488$:	0
$u_5 = p'_{10} =$	$\bar{1}\cdot9983627$:	+ 47139 :
$u_{10} = p'_{15} =$	$\bar{1}\cdot9980733$:	+ 44245 :
$u_{20} = p'_{25} =$	$\bar{1}\cdot9965108$:	+ 28620 :
$u_{30} = p'_{35} =$	$\bar{1}\cdot9933917$:	− 2751 :
$u_{40} = p'_{45} =$	$\bar{1}\cdot9893048$:	− 43440 :
$u_{50} = p'_{55} =$	$\bar{1}\cdot9823833$:	− 112655 :

The working out of the formulæ leads to the following results—

$\delta^6 u_0 =$ .... − : 6282552
$\delta^5 u_0 =$ .... + 14 : 2743429
$\delta^4 u_0 =$ .... − 154 : 2905086
$\delta^3 u_0 =$ .... + 1046 : 5677300
$\delta^2 u_0 =$ .... − 5090 : 7329360
$\delta u_0 =$ .... + 17667 : 5660519

By reference to vol. lxii, page 463, the mode of proceeding with the interpolation will be evident.

The formulæ for the above series, viz., u_5, u_{10} . . . &c., have been worked out and tested as far as u_{85} (nine orders of differences); but although the greater the number of orders of differences taken, the more mathematically perfect is the p'_x curve obtained, the labour of going beyond u_{50} is so great as to make it scarcely worth while to extend the scheme beyond what has been given.

After having worked out by the proposed scheme a complete series of p'_x values from p'_5 onwards, it must not be forgotten that they are for the *exact age x*, that is to say, they give the chance of living from age $x - \frac{1}{2}$ to age $x + \frac{1}{2}$.

Before being applied to the next stage in Life-Table construction, viz., the calculation of the l_x column, they must be reduced to values such as will represent the chance of living from age x to age $x + 1$.

The simplest mode of doing this would be to take the geometrical mean of two consecutive p'_x values (or in other words the arithmetical mean of their logarithms) as the required intermediate value.

However, a more accurate and more evenly graduated curve is to be obtained by making each of the new p_x values to occupy the central point in the interval between the extremes of a series of four consecutive p'_x values.

Simple formulæ by which this can be effected have been given in vol. lxii, pp. 475 and 479, applied there respectively to u_x and E_x values.

Changing the notation, we shall have—

$$p_6 = \frac{10(p'_6 + p'_7) - (p'_5 + p'_6 + p'_7 + p'_8).}{16}$$

For p_5, in order to bring in the p_4 value previously obtained, the following formula may be used—

$$p_5 = \frac{-4p_4 + 15p'_5 + 10p'_6 - p'_7}{20};$$

a formula for obtaining the *last* required value of the series is given at the above reference on p. 479.

This last series of interpolations can be very quickly effected; but it is of importance, in order to detect slips in calculation, to difference the series of p_x values as one goes along.

In endeavouring to be concise, very much has had to be left out of this paper which might have been included, and it has had of necessity to be assumed that the paper previously published, and to which repeated reference has been made, has been read or is at hand.

As a concluding illustration of the results of the method described, the p_x series from p_5 to p_{35} have been worked out in three examples, viz., Manchester City (males), England and Wales (males), and Selected Healthy Districts (males); in each case the data are those for 1881-90.

These are sets of data widely differing in their relations, and are given as examples of types, to one or other of which all Life-Tables founded on a sufficiently wide basis of facts would probably conform.

A tabular statement follows of the numerical values of the logs. of the p_x series, with their first differences indicated, *i.e.*, the successive values of $p_{x+1} - p_x$. An inspection of these and of the accompanying diagrams will show that the curves are fairly satisfactory. If space permitted, the more perfect results obtained by taking in succession seven, eight, and nine orders of differences might have been illustrated.

Table of p_x Values from p_5 to p_{35}, worked out by the Method above described, the First Differences being also indicated.

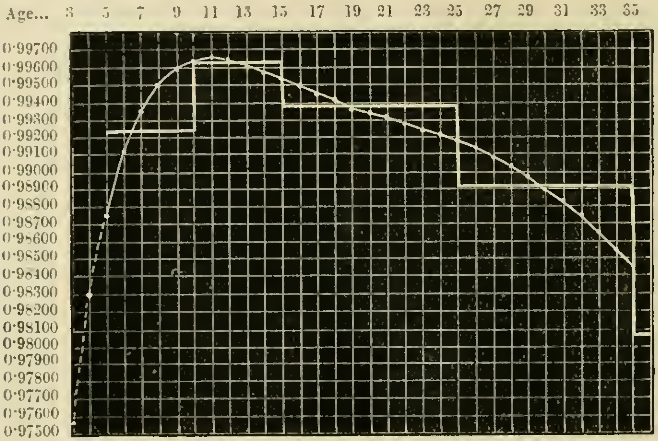
	Manchester City (Males).	England and Wales (Males).	Selected Healthy Districts (Males).
p_5	0·98763 − 0·00343	0·99171 + 0·00206	0·99436 + 0·00120
p_6	0·99106 + 0·00240	0·99377 + 0·00148	0·99556 + 0·00089
p_7	0·99346 + 0·00156	0·99525 + 0·00099	0·99645 + 0·00062
p_8	0·99502 + 0·00094	0·99624 + 0·00060	0·99707 + 0·00042
p_9	0·99596 + 0·00046	0·99684 + 0·00030	0·99749 + 0·00023
p_{10}	0·99642 + 0·00012	0·99714 + 0·00008	0·99772 + 0·00009
p_{11}	0·99654 − 0·00012	0·99722 − 0·00008	0·99781 − 0·00002
p_{12}	0·99642 − 0·00028	0·99714 − 0·00020	0·99779 − 0·00011
p_{13}	0·99614 − 0·00036	0·99694 − 0·00026	0·99768 − 0·00018
p_{14}	0·99578 − 0·00041	0·99668 − 0·00030	0·99750 − 0·00023
p_{15}	0·99537 − 0·00042	0·99638 − 0·00031	0·99727 − 0·00026
p_{16}	0·99495 − 0·00041	0·99607 − 0·00032	6·99701 − 0·00028
p_{17}	0·98454 − 0·00038	0·99575 − 0·00031	0·99673 − 0·00029
p_{18}	0 99416 − 0·00035	0·99544 − 0·00028	0·99644 − 0·00030
p_{19}	0·99381 − 0·00033	0·99516 − 0·00028	0·99614 − 0·00029
p_{20}	0·99348 − 0·00032	0·99488 − 0·00025	0·99585 − 0·00028
p_{21}	0·99316 − 0·00031	0·99463 − 0·00024	0·99557 − 0·00027
p_{22}	0·99285 − 0·00032	0·99439 − 0·00024	0·99530 − 0·00025
p_{23}	0·99253 − 0·00035	0·99415 − 0·00024	0·99505 − 0·00024
p_{24}	0·99218 − 0·00038	0·99391 − 0·00025	0·99481 − 0·00023
p_{25}	0·99180 − 0·00043	0·99366 − 0·00026	0·99458 − 0·00022
p_{26}	0·99137 − 0·00049	0·99340 − 0·00028	0·99436 − 0·00020
p_{27}	0·99088 − 0·00056	0·99312 − 0·00031	0·99416 − 0·00020
p_{28}	0·99032 − 0·00064	0·99281 − 0·00033	0·99396 − 0·00018
p_{29}	0 98968 − 0·00071	0·99248 − 0·00037	0·99378 − 0·00019
p_{30}	0·98897 − 0·00080	0·99211 − 0·00040	0·99359 − 0·00019
p_{31}	0·98817 − 0·00086	0·99171 − 0·00044	0·99340 − 0·00018
p_{32}	0·98731 − 0·00093	0·99127 − 0·00047	0·99322 − 0·00019
p_{33}	0·98638 − 0·00098	6·99080 − 0·00050	0·99303 − 0·00020
p_{34}	0·98540 − 0·00101	0·99030 − 0·00052	0·99283 − 0·00021
p_{35}	0·98439	0·98978	0·93262

These values of p_x have been worked out all throughout from series (1). From p_{25} onwards, when "welded" with series (2), they differ somewhat, but the differences are almost equally regular. It has been found better by actual trial to weld series (1) with series (2) at the interval between p'_{25} and p'_{35} rather than between p'_{35} and p'_{45}.

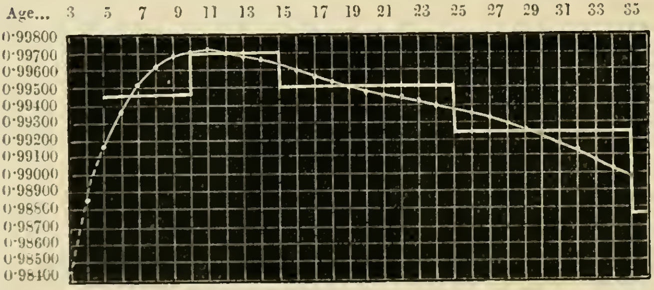
In these diagrams the p_x curves from p_5 to p_{35}, calculated by the method described, are shown drawn to scale.

In order to show the symmetry of the curves, p_3 and p_4 are also indicated.

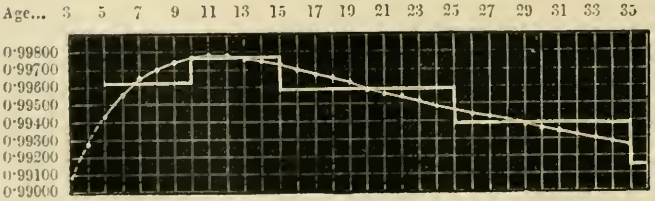
The straight lines represent to scale the mean p_x values for the respective age-periods 5—10, 10—15, 15—25, 25—35, as calculated from the population and death numbers for the whole age-period by the fraction $\frac{2P - d}{2P + d}$.



Manchester City (Males), 1881-90.



England and Wales (Males), 1881-90.



Selected Healthy Districts (Males), 1881-90.

III.—*On the Use of Auxiliary Curves in Statistics of Continuous Variation.* By W. F. SHEPPARD, M.A., LL.M.

PART II.

Data arranged by Numerically-equal Classes.

14. IN the preceding sections (*ante*, pp. 433—458) we have supposed the data to be arranged by equal divisions of a scale. In some cases, however, this method of tabulation presents the material in a rather inconvenient form. Thus in Example 3 (p. 434) the number of deaths between the ages of 0 and 1 is nearly four times the number between 1 and 2, and is more than one-ninth of the total number considered; while in Example 4 we have a division into eleven classes, two of which together absorb more than three-fourths of the whole number of observations. The rapid change of frequency, in each case, produces a difficulty, not only with regard to interpolation and the calculation of ordinates, but also with regard to the calculation of the moments of the figure of frequency.

This difficulty is always liable to occur when the figure of frequency is terminated, at either or both of its extremities, by an ordinate which is relatively very great. That the difficulty is a real one, and is felt by practical men, not merely by students of accurate method, is shown by the attempts that are often made to overcome it. These usually consist in a rather clumsy process of subdivision of the larger classes. Thus it will be found that, in the official returns with regard to income-tax assessments, incomes from 160*l*. to 200*l*. are given separately; the table then proceeds by intervals of 100*l*. up to a total of 1,000*l*., when the intervals change to 1,000*l*.; and so on. Similarly, in classifying the number of estates assessed to probate duty, the determining values are successively 1,000*l*., 4,000*l*., 10,000*l*., 50,000*l*., 100,000*l*., 500,000*l*., and 1,000,000*l*. A table made out in this way is useful as a basis for rough statements, but it is inconvenient for the purpose of accurate deductions.

We have already seen that, as regards interpolation and the calculation of ordinates, the difficulty is partially met by the use of auxiliary curves; but the results can only be somewhat conjectural, on account of our ignorance as to the most suitable curve. This method, moreover, does not give us very much direct assistance towards the calculation of moments. The general problem of how to deal with distributions of this kind is greatly simplified by the use of the *centile* method of classification. Whenever the figure of frequency, whose abscissa is X, is terminated by a very great ordinate, the observations near this value of X should be arranged in order of magnitude, and divided into numerically equal classes; and the quantity tabulated should be the value of X which determines each class in succession. Thus the observations tabulated in Examples 3 and 4 (p. 434) would show some such result as the following:—[18]

EXAMPLE 7.—*Mortality Table* (127,283 *Births*).

Proportion of Deaths.	Occurring before Age.	Proportion of Deaths.	Occurring before Age.
·00	0·00000	·45	52·369
·05	0·09884	·50	57·024
·10	0·7009	·55	60·894
·15	2·2945	·60	64·224
·20	6·842	·65	67·1883
·25	21·089	·70	69·9138
·30	30·850	·75	72·5043
·35	39·435	·80	75·0587
·40	46·607		

EXAMPLE 8.—*Degrees of Cloudiness* (3,653 *Observations*).

Proportion of Observations.	Degree of Cloudiness.	Proportion of Observations.	Degree of Cloudiness.
·0	0·375	·6	10·919
·1	0·394	·7	10·976
·2	0·926	·8	10·982
·3	3·82	·9	10·982
·4	9·58	1·0	10·982
·5	10·623		

In the second of these examples the centile method is adopted throughout the whole range, since both the bounding ordinates are very great. This is not necessary in the first example, since it is only for dealing with the smaller values of X that a departure has to be made from the ordinary method.

The problems to be considered in the following sections are (1) interpolation, and (2) calculation of the ordinates of the figure of frequency, from data presented in the above form.[19]

15. It will be seen that there is a converse relation between this method of tabulation and the ordinary method. The ordinary method gives A in terms of X, the values of X proceeding by

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[18] As the system of tabulation here suggested is not in common use, at any rate in regard to the cases where it is of most advantage, I am not able to give examples from direct observation. The method of finding the values given in Example 8 has been already explained (*ante*, § 13). Example 7 was constructed in the same way, as regards the first few percentiles; the remainder were derived from Table 3 by ordinary indirect interpolation.

It will be noticed that the total number of observations is given in each case. This should always be done, for the purpose of calculating the probable errors of the frequency-constants.

In deriving Example 8 from Example 4, "degree 0" is taken to mean "degree less than 1"; and similarly for the others.

[19] The method of calculating the moments of the figure of frequency has been dealt with in a paper in the *Philosophical Magazine* for October, 1900 (pp. 393—398).

equal increments; while the method now under consideration gives X in terms of A, the values of A proceeding by equal increments. Hence, if the differences of X diminish with sufficient rapidity, ordinary formulæ can be used for finding the value of X corresponding to an arbitrary value of A, or the value of A corresponding to an arbitrary value of X; the only difference being that what is direct interpolation under the one method of tabulation becomes indirect interpolation under the other, and *vice versa*.

Take, for instance, the values of X as given in Example 7, from A = ·40 to A = ·80 :—

A.	X.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.	5th Difference.	6th Difference.
·40	46·607						
		+ 5·762					
·45	52·369		− 1·107				
		4·655		+ ·322			
·50	57·024		·785		− ·077		
		3·870		·245		+ ·0063	
·55	60·894		·540		·0707		+ ·0170
		3·330		·1743		·0233	
·60	64·224		·3657		·0174		+ ·0010
		2·9643		·1269		·0243	
·65	67·1883		·2388		·0231		− ·0061
		2·7255		·1038		+ ·0182	
·70	69·9138		·1350		− ·0049		
		2·5905		+ ·0989			
·75	72·5043		− ·0361				
		+ 2·5544					
·80	75·0587						

For X = 65 the value of A as given by the Life-Table is

$$A = 77974/127283 = \cdot 61260\,;$$

and it will be found that this agrees with the value as deduced from the above table by indirect interpolation.

Similarly, for calculating the ordinates of the figure of frequency, we have (see p. 437)

$$\begin{aligned} Z &= dA/dX \\ &= 1 \div (dX/dA) \quad \ldots \quad \ldots \quad \ldots \quad (36) \end{aligned}$$

and the value of dX/dA can, in cases like the above, be calculated directly from the data, by formulæ similar to those given in § 4.

The cases, however, which we have more especially to consider, are those in which the differences of X with regard to A diverge so rapidly that the ordinary formulæ cannot be used. We must then have recourse to an auxiliary curve.

16. The method to be employed is closely analogous to that previously considered. Taking, as before,

$$z = f(x) \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

as the equation to our auxiliary curve, and writing

$$a = \int_{x_0}^{x} z\,dx \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

we connect A and a by the relation

$$X = x \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (37)$$

so that, if X_0 is the value of X corresponding to $A = 0$, we have

$$a = \int_{X_0}^{X} f(X)dX \quad \ldots \quad \ldots \quad (38)$$

This gives a series of values of a in terms of A; and $f(X)$ must be taken to be of such a form that the differences of a with regard to A may diminish rapidly. This is on the assumption that we are dealing with the lower extremity of the figure of frequency; the principle is the same if we are dealing with the upper extremity, the values of A being then reckoned in the reverse direction.

Having constructed our table of a in terms of A, we use the ordinary formulæ of interpolation to determine a for any intermediate value of A; and we then calculate the corresponding value of X by means of (38). Or, if we wish to find A for an arbitrary value of X, we calculate a for this value by means of (38), and obtain A by indirect interpolation.

Let θ denote the constant difference of successive values of A. Then, for determining the value of any ordinate Z, or its reciprocal 1/Z,[20] we have

$$\begin{aligned} \theta/Z &= \theta \,.\, dX/dA \\ &= \theta \,.\, dx/dA \\ &= \theta \,.\, dx/da \,.\, da/dA \\ &= 1/z \,.\, \theta da/dA \quad \ldots \quad \ldots \quad \ldots \quad (39) \end{aligned}$$

The value of z is known, by (10), for any selected value of A; and the value of $\theta da/dA$ is calculated by the ordinary formulæ.

17. The principles regulating the choice of an auxiliary curve are the same as those which have been already explained in Part I. It is assumed that the data may be taken as showing the result of random sampling from an indefinitely great aggregate of individuals; and the ideal curve, if we could find it, would be the curve of frequency of X for this aggregate. If we could use this curve, and if the random sampling happened to give an exactly representative selection, we should have

$$a = A$$

throughout the whole range of values of X. What we should aim at, therefore, is to find a curve which should make the values of a and of A, throughout the portion of range considered, as nearly equal as possible. But if the values of x and of X, when A is tabulated in terms of X, and a is taken equal to A, are very nearly equal, then the values of a and of A, when X is tabulated in terms of A, and x is taken equal to X, will also be very nearly equal. Hence, if any particular curve is suitable for any particular data when tabulated in the ordinary way, the same curve will generally be suitable for the same data when tabulated by the centile method, and *vice versa.* This rule, however, though general, is not universal, since the applicability of a particular curve might happen to be due to the constancy, not of the first differences appearing in the final table, but of the second or third differences.

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[20] Instead of taking Z as our ordinate for abscissa X, we might very well take 1/Z. The curve so found might be regarded as a "curve of variability," or "curve of differentiation," using the latter term in its non-mathematical sense. Where the value of 1/Z is small, a large number of individuals are very much alike, and distinction is difficult; but where it is large, the individuals vary greatly from one another.

18. It has already been observed (see § 12) that the curve

$$a \propto x^q$$

will often be found useful as an auxiliary curve; x being measured from the extremity of the figure of frequency, and q being some quantity between 0 and 1. This would give, if we replace the lower limit of X by X_0,

$$(x - \mathrm{X}_0) \propto a^{1/q},$$

which may more conveniently be written

$$\mathrm{C}' \,.\, \mu(x - \mathrm{X}_0) = a^r \quad \ldots \qquad \ldots \qquad \ldots \quad (40)$$

where r is some unknown quantity greater than 1, C′ is an unknown constant, and μ is an arbitrary constant introduced for convenience of calculation. To determine C′ and r, let us take two values A_m and A_n of A, the corresponding values of X being X_m and X_n. Then, if (40) were the equation to the curve of frequency, we should have

$$\left.\begin{array}{l} \log \mathrm{C}' + \log \mu\ (\mathrm{X}_m - \mathrm{X}_0) = r \log \mathrm{A}_m \\ \log \mathrm{C}' + \log \mu\ (\mathrm{X}_n - \mathrm{X}_0) = r \log \mathrm{A}_n \end{array}\right\} \quad \ldots \quad (41)$$

and therefore

$$1/r = \frac{\log \mathrm{A}_m - \log \mathrm{A}_n}{\log \mu(\mathrm{X}_m - \mathrm{X}_0) - \log \mu(\mathrm{X}_m - \mathrm{X}_0)} \quad \ldots \quad (42)$$

$$1/r \,.\, \log \mathrm{C}' = \frac{\log \mathrm{A}_n \log \mu(\mathrm{X}_m - \mathrm{X}_0) - \log \mathrm{A}_m \log \mu(\mathrm{X}_n - \mathrm{X}_0)}{\log \mu(\mathrm{X}_m - \mathrm{X}_0) - \log \mu(\mathrm{X}_n - \mathrm{X}_0)} \quad (43)$$

Hence, if we use (40) as an auxiliary curve, the values of a in terms of A are given by

$$\log a = 1/r \,.\, \log \mathrm{C}' + 1/r \,.\, \log \mu(\mathrm{X} - \mathrm{X}_0) \quad \ldots \quad (44)$$

suitable values for $1/r$ and $1/r$. log C′ being found from (42) and (43), or from (41) and (42), by the method explained in § 12.

Thus Example 7 gives, taking $\mu = 100$,

A	$\log_{10} \mu(\mathrm{X} - \mathrm{X}_0)$.
·00	$-\infty$
·05	·99493
·10	1·84566
·15	2·36069
·20	2·83518
·25	3·32406

Applying (42) to different pairs of values of m and n, I find the following values for $1/r$:—

$A_n =$	·05	·10	·15	·20
$A_n =$ ·10	·354			
·15	·349	·342		
·20	·327	·304	·263	
·25	·300	·269	·230	·198

Taking $1/r = {\cdot}365$, (41) will be found to give the following values for $1/r \,.\, \log_{10} C'$:—

A_m	$1/r \,.\, \log_{10} C'$.
·05	2·34477
·10	$\bar{2}$·34295
·15	$\bar{2}$·33569
·20	$\bar{2}$·29171

If now we take $1/r = {\cdot}356$, $1/r \,.\, \log_{10} C' = \bar{2}{\cdot}34600$, we get the following table of a in terms of A:—

A.	Log$_{10}$ a.	a.	1st Difference.	2nd Difference.	3rd Difference.	4th Difference.
·00	$-\infty$	·00000				
			+ 5014			
·05	2·70020	·05014		+ 42		
			5056		+ 193	
·10	$\bar{1}$·00305	·10070		235		+ 1583
			5291		1776	
·15	$\bar{1}$·18641	·15361		2011		+ 83
			7302		+ 1859	
·20	$\bar{1}$·35532	·22663		+ 3870		
			+ 11172			
·25	$\bar{1}$·52937	·33835				

Suppose, for example, that we wish to find the value of A for age 2. Then we have

$$\mu(X - X_0) = 200,$$

so that the corresponding value of $\log_{10} a$ as given by (44) is

$$\bar{2}{\cdot}34600 + {\cdot}356 \log_{10} 200 = \bar{1}{\cdot}16517,$$

and therefore

$$a = {\cdot}14627.$$

Using receding differences (from A = ·15) up to the third, I find for the corresponding value of A

$$A = {\cdot}14326;$$

the true value by the Life-Table being

$$A = 18320/127283 = {\cdot}14393.$$

It must of course be remembered that the values of X in

Example 7 were themselves found from the Life-Table by the application of an auxiliary curve of this form.

For calculating the ordinates of the curve, we have, from (40),

$$1/a \,.\, da/dx = 1/r \,.\, 1/(x - X_0)\,;$$

and hence, by (39).

$$\theta/Z = r \,.\, (X - X_0)/a \,.\, \theta da/dA \quad \ldots \qquad \ldots \quad (45)$$

Thus, for A = ·14393 (corresponding to X = 2), I find, taking receding differences up to the third,

$$\theta da/dA = \cdot 05422\,;$$

and thence, a being equal to ·14627,

$$Z/(1 - A) = \cdot 02805.$$

The value found directly from Table 3 was (*ante*, p. 454)

$$Z/(1 - A) = \cdot 02734.$$

19. In applying the curve (40) to Example 8, we should have to deal with the two extremities of the range separately. It would no doubt be more convenient to use a single auxiliary curve with an equation of the form

$$Z \propto (x - X_0)^{-p}(X_n - x)^{-q} \quad \ldots \qquad \ldots \quad (46)$$

X_0 and X_n being the limiting values of X; but our mathematical tables are not yet sufficiently complete to enable such an equation to be used with facility. There may, however, be a few cases in which workable values could be given to p and q.

To explain the method of using (46) in exceptional cases of this kind, and also to illustrate the general accuracy of the results obtained by applying an auxiliary curve to the centile method of tabulation, let us take the distribution whose curve of frequency has the equation

$$Z = \frac{2}{3\pi}\left(\sqrt{X} + \sqrt{1 + X}\right) / \sqrt{X(1 - X^2)} \quad \ldots \quad (47)$$

This gives

$$A = \frac{2}{3\pi}\left(\sin^{-1}X + 2\sin^{-1}\sqrt{X}\right) \ldots \qquad \ldots \quad (48)$$

whence it may be shown that

$$\frac{2}{X} = \frac{1 + \sin\frac{3}{4}\pi A}{1 - \cos\frac{3}{4}\pi A} + \frac{1 - \cos\frac{3}{4}\pi A}{1 + \sin\frac{3}{4}\pi A},$$

and therefore

$$X = (1 + \sin\tfrac{3}{4}\pi A)(1 - \cos\tfrac{3}{4}\pi A)/\{(1 + \sin\tfrac{3}{4}\pi A) + (1 - \cos\tfrac{3}{4}\pi A) - \tfrac{1}{2}\} \quad (49)$$

$$= (1 + \sin\tfrac{3}{4}\pi A - \cos\tfrac{3}{4}\pi A - \tfrac{1}{2}\sin\tfrac{3}{2}\pi A)/(\tfrac{3}{2} + \sin\tfrac{3}{4}\pi A - \cos\tfrac{3}{4}\pi A) \quad (49\text{A})$$

Using Callet's tables, I get the following values of X:—

EXAMPLE 9.

A.	X.	A.	X.
·0	·000 000 000	·6	·719 246 152
·1	·044 778 995	·7	·836 224 809
·2	·119 085 482	·8	·925 325 404
·3	·284 511 115	·9	·981 045 528
·4	·433 238 283	1·0	1·000 000 000
·5	·581 836 654		

Choosing as our auxiliary curve

$$z = \frac{1}{\pi} \frac{1}{\sqrt{x(1-x)}} \quad \ldots \quad \ldots \quad \ldots \quad (50)$$

so that

$$a = \frac{2}{\pi} \sin^{-1} \sqrt{x} \quad \ldots \quad \ldots \quad (51)$$

$$= \frac{1}{\pi} \cos^{-1}(1-2x) \quad \ldots \quad \ldots \quad (51\text{A})$$

we get the following values of a :—

A.	a.	A.	a.
·0	·000 000 000	·6	·644 487 354
·1	·135 741 635	·7	·734 757 834
·2	·252 367 041	·8	·823 791 809
·3	·358 168 734	·9	·912 073 948
·4	·457 370 856	1·0	1·000 000 000
·5	·552 334 294		

If the successive differences of these values of a are taken, it will be found that they run very regularly, the tenth difference being −·000 213 728. Thus we might use formulæ involving all the differences up to the tenth, the formulæ used for any particular purpose being different for different portions of the table, so as always to conclude with the same tenth difference. But this, as already explained (see § 9), would produce the same result as if we continued the table in both directions, taking the tenth difference as constant, and then used central-difference formulæ. Adopting this method, and applying the formula (8) to the calculation of $\theta da/dA$, I get the values of $1/Z$ shown below :—

A.	da/dA.	$1/z$.	1/Z (Calculated Value).	1/Z (True Value).
·1	1·2427561 42	·6497390 60	·8074672	·8074462
·2	1·1027741 19	1·1189495 77	1·2339486	1·2339558
·3	1·0199723 53	1·4174277 70	1·4457371	1·4457341
·4	·9678661 42	1·5567308 76	1·5067071	1·5067088
·5	·9337166 40	1·5496135 04	1·4468999	1·4468986
·6	·9108567 38	1·4117295 49	1·2858834	1·2858846
·7	·8956112 33	1·1626137 47	1·0412199	1·0412482
·8	·8858623 62	·8258165 01	·7315598	·7315627
·9	·8804435 61	·4284008 26	·3771827	·3771763

These values are a good deal more accurate than the values obtained directly from the original table.

To obtain X for an arbitrary value of A, we find the corresponding value of a by interpolation; and then (51) gives

$$\sqrt{X} = \sin \tfrac{1}{2}\pi a \quad \ldots \quad \ldots \quad \ldots \quad (52)$$

or

$$X = \sin^2 \tfrac{1}{2}\pi a = \tfrac{1}{2}(1 - \cos \pi a) \quad \ldots \quad \ldots \quad (52\text{A})$$

Thus for

$$A = {\cdot}25$$

I find

$$a = {\cdot}306\ 296\ 482;$$

and thence, by (52A),

$$X = {\cdot}2141659.$$

The true value, as derived from (49) or (49A), is

$$X = {\cdot}2141661.$$

20. The integral curve of frequency, considered in § 10, is the curve whose abscissa is X and ordinate A. This curve may be considered as enclosed in a rectangle whose sides are respectively $X_n - X_0$ and 1 (see fig. 1, p. 458). If we draw a series of ordinates proportional to the values of X as given by a centile tabulation, at distances proportional to the selected values of A, and join the tops of these ordinates by a curve, this may be taken as representing the curve whose abscissa is A and ordinate X. But this curve could be obtained from the former by turning the whole figure through a right angle and then turning it over; or, if we took 1 − A instead of A as the ordinate, by merely turning it through a right angle. Thus we see the reason for the different method of tabulation. Fig. 1 (p. 458) gives the curve (ordinate A) for a case in which the frequency of the extreme values of X is indefinitely small; the curve then runs in a horizontal direction at each extremity. But if, as in Example 4, the frequency of the extreme values of X were indefinitely great, the curve would run in a vertical direction at its extremities. This is inconvenient for the purpose of finite-difference formulæ; and we therefore turn the figure round so that the directions may be horizontal.

Fig. 4, for instance (p. 647), shows the form of the curve whose abscissa is A and ordinate X, for the distribution considered in Example 9.

To test whether any particular curve is suitable to any particular case, we might proceed graphically, as in § 10. Suppose, for instance, that we had paper ruled with lines at distances corresponding to the successive values of a for equal increments in x (or at distances corresponding to the successive values of x for equal increments in a), for the curve whose equation is

$$z = \frac{1}{\pi} \frac{1}{\sqrt{x(1 - x)}},$$

and that we wished to test the suitability of this curve for Example 9. Taking A as our abscissa, and marking off the points corresponding to the given values of X, we obtain a series of ordinates proportional to the values of a. The curve joining the tops of these ordinates is shown in fig. 5; and it will be seen that the changes of curvature are very slight, so that the curve may be regarded as suitable. Fig. 6 shows the result of applying the same method to the curve

$$z = \tfrac{1}{4}(1/\sqrt{x} + 1/\sqrt{1-x}),$$

but this curve does not give such good results.

21. Cases in which both the bounding ordinates of the figure of frequency are very great are not of common occurrence, and it is therefore difficult to prescribe any curve as likely to be generally applicable. But a special graphical method can be adopted for testing whether the curve

$$a \propto (x - X_0)^q$$

is suitable for cases in which one bounding ordinate is very great, whether the data are presented in the ordinary way or by a centile classification. The equations (41) (p. 641) are really identical with the equations in C and q given in § 12 (p. 452); and, if one pair of values of C and q satisfied all the equations of this form given by the data, the curve whose abscissa is log λA and ordinate log $\mu(X - X_0)$, where λ and μ are any convenient constants, would be a straight line. Cases of this kind may therefore be dealt with by "logarithmic paper," the paper being ruled not merely vertically but also horizontally. We have only to mark off[21] the points (λA, $\mu(X - X_0)$), and see whether they lie approximately on a straight line, or at any rate on a curve whose changes of direction are very slow. Continuing the curve backwards, we can draw an asymptote to it; and the tangent of the angle which this asymptote makes with the line along which $\log_{10} \mu(X - X_0)$ is measured, is $q \equiv 1/r$. A suitable value for the other constant involved (C or $1/r$. log C′) may also be found from the figure; or it may be calculated, as in § 18. Or, without calculating the constants, we may use the curve itself as the means for a rough interpolation.

Fig. 7 shows the result of applying this method to Example 3. The lines intersecting at the point marked with a small circle are the zero lines, corresponding to $\lambda A = \mu(X - X_0) = 1$; and the lines above and to the right of these are at distances proportional to log 2, log 3, . . . log 10, as on the ordinary slide-rule. The zero lines are continued backwards, in the direction of $-\infty$. The points whose abscissæ are μX and λA, where $\lambda = 127283/10^4$, and $\mu = 1$, are shown by dots; these points lie on a curve, the continuation of which, backwards, is shown by a dotted line; and the ultimate direction of this line gives the value of q. If we wished to interpolate for any value of X less than 1, we ought to take a different value for μ. We might, for instance, take $\mu = 100$; the values of λA would then be marked off on the lines 100, 200, . . . , instead of on those marked 1, 2, . . . ; and the curve would have to be continued backwards to the value of X under consideration.

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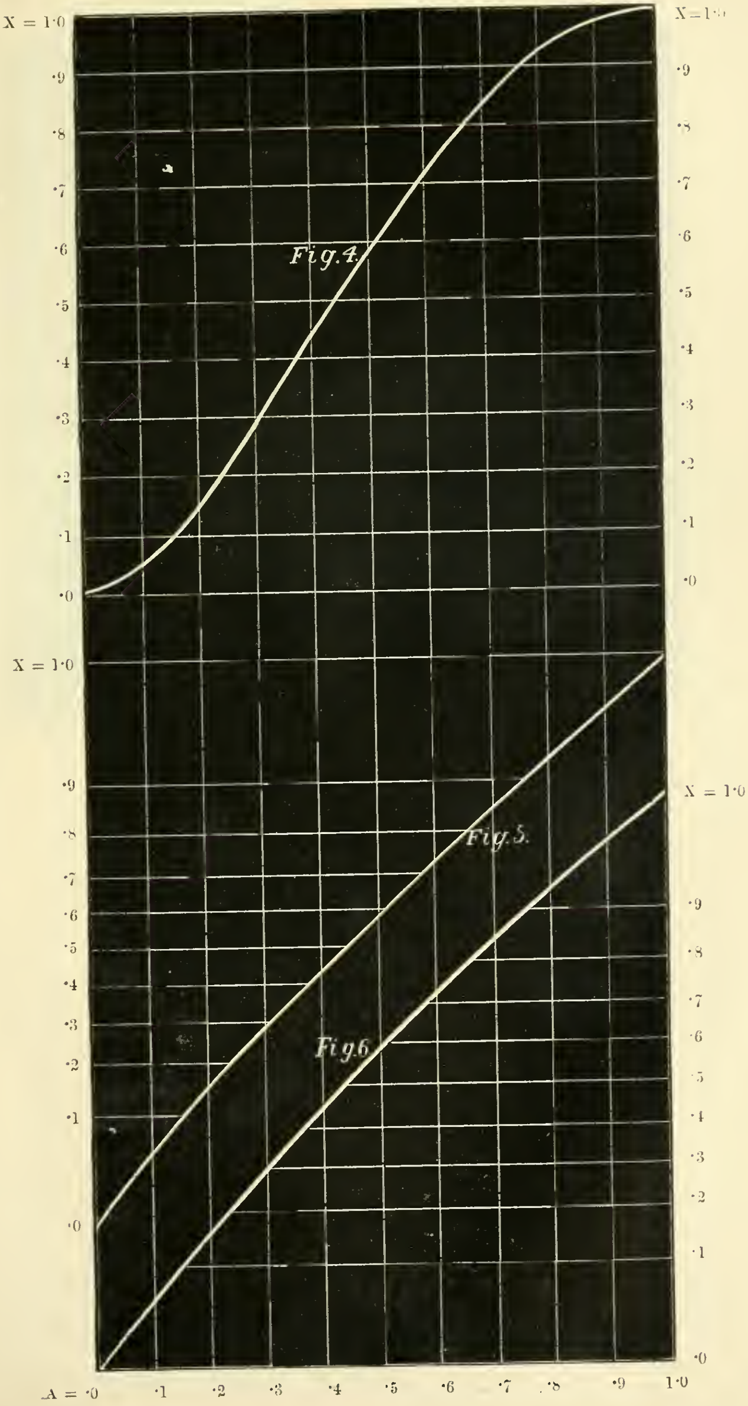
[21] Instead of using specially ruled paper, the abscissa log λA and ordinate log $\mu(X - X_0)$ can be measured from a slide-rule.


X = 1·0
·9
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X = 1·0
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Fig. 4.
Fig. 5.
Fig. 6.
X = 1·0
·9
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X = 1·0
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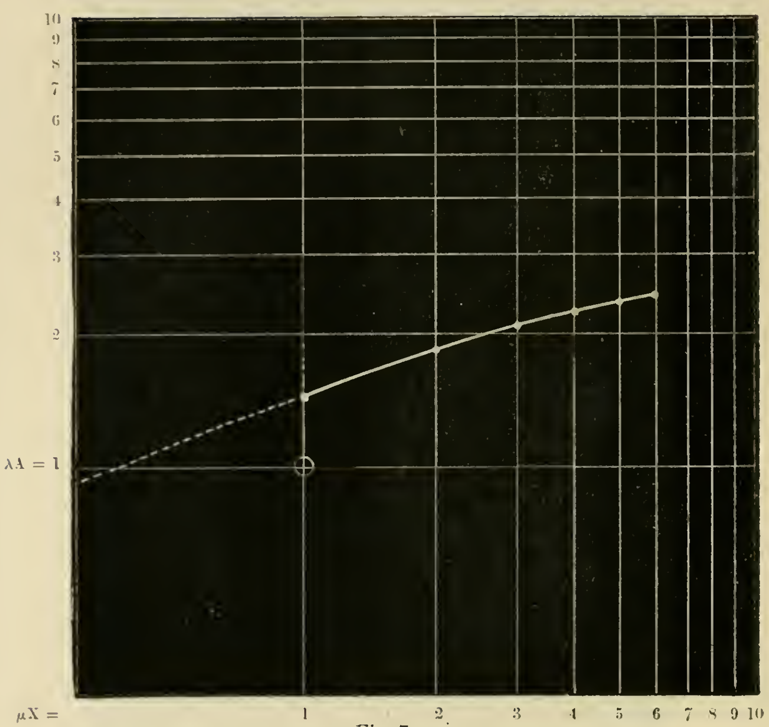

Fig. 7.

IV.—*Farm Prices of Wheat and Maize in America*, 1870-99.

By R. H. Hooker, M.A.

Much has been written concerning the cost of carriage from America as an element in the price of grain and other products in this country; but the treatment of this subject appears to have hitherto taken mainly the form of a discussion upon the reduction of freights from different points in the United States, or of an examination into the cost of production in important localities. I am not aware, however, that much use has been made of the farm prices of wheat and maize annually registered by the United States Department of Agriculture. By the use of these data we are enabled to get behind the price at ports of shipment such as Chicago, Duluth, &c., and any reduction thus shown in the cost of moving the grain from the farm should cover changes in cost of conveyance to the ports. The accompanying diagrams, illustrating the gradual approximation of the price of wheat and maize in this country to those on the farm on the other side of the Atlantic, accordingly appear to be worth placing on record.

The "farm prices" in the United States relate to a single day only, viz., the 1st December of each year, and therefore may or may not accurately represent the annual price. The date selected is, however, a very reasonable one, and comparisons of these prices over a series of years may, I think, justifiably be made. The diagrams show, moreover, that there are no very startling inconsistencies to raise the suspicion that they may not be taken as approximately correct.

On these diagrams I have placed four curves, showing (1) the price on the farm in that State where the grain has been throughout the period cheapest, (2) the average price in the main centre (area) of production, (3) the average farm price in the whole of the United States, and (4) the average Gazette price (of wheat) or import value (of maize) in the month of December[21] in this country.

As regards the great centres of production. I have selected a compact district of six contiguous States where the farm prices have throughout been lowest, each producing a large quantity of the cereal. This area is, I think, of sufficient size to be considered an important factor in the determination of the price throughout the country. My wheat centre includes the States of Illinois, Iowa, Missouri, Minnesota, Kansas, and Nebraska, the cheapest of all being Nebraska. In the maize belt the only difference is that Indiana replaces Minnesota, while the cheapest State is Iowa.[22]

The grouping of the wheat States is not in all respects satisfactory. Missouri, Iowa, and Illinois have not much claim, in virtue of the amount produced, to rank among them. But they are considerably cheaper than the two States to the east, Indiana and Ohio, each of which has nearly double the acreage of either of the three; and my object has been to pick out the district (provided it be of sufficient size) where wheat is cheapest. The omission of the Dakotas will naturally be noticed. The reason is simply that the price records for these two States do not go back far enough, nor is their grain area ascertainable in 1870. The real difficulty in selecting the States is that the wheat belt has undergone a considerable shift to the west during the period under review; the area in Illinois is now only half what it was in 1870, and that in Iowa is also reduced, while the States west of these have enormously increased their acreage, and new territories have been laid under contribution. It may be mentioned that the farm price in South Dakota (the cheaper of these two new States) is about equal to that of Nebraska.

As regards the actual area devoted to wheat in this centre, Minnesota, Kansas, Nebraska, Iowa, Illinois, and Missouri occupied in 1899 respectively the first, third, eighth, eleventh, twelfth, and fourteenth places among the States; the second and fourth places being taken by North and South Dakota. In 1870 Illinois had the largest area; but, apart from Iowa and Minnesota, the others have come to the front since that date. These six States had in 1870 a total area under wheat of 5,783,000 acres (30 per cent. of the total wheat area of the United States), and in 1899 of 14.649,000 acres (33 per cent. of the total). The area in the adjoining Dakotas, Ohio, and Indiana amounted last year to 12,975,000 acres, so that the ten States accounted for 62 per cent. of the total area under this cereal. The six States chosen, therefore, if not actually the wheat belt, are in the middle of it and representative of it.

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[21] Mean of *Gazette* average of last four weeks of year.

[22] But in some years, especially during 1880-90, Nebraska and some other States were cheaper, so much so as to make the Iowa price above the average of the six States on two occasions.

The maize belt is much better defined, the six States named, judged by area, being among the first seven maize producing States, distant Texas occupying the sixth place. In 1899 they had 41,493,000 acres (just over 50 per cent. of the United States area), and in 1870 15,299,000 acres (40 per cent.) under maize. Moreover, five of these (Missouri being the exception) exported 35 million bushels or more out of the State in 1899. For these reasons, and also because the geographical position of the belt has not materially changed, I incline to think that any indications yielded by the data relating to this corn rest on firmer ground than those referring to wheat.

I have commenced with the year 1870 mainly in order to get complete quinquennial periods (as figures relating to single years cannot generally form the basis of reliable deductions), and the price in America during the sixties was abnormally high owing to the Civil War. The effect of this seems to have passed away by 1870. The "average" price in the corn centres is, I should state, merely the arithmetic mean of the six prices quoted for the States. In the following table I have summarised the annual figures given in Tables 1 and 2 at the end:—

Wheat; Price per Quarter.

	Gazette Average (December).		United Kingdom Imports (December).		United States Farm Average.		Six Wheat States Farm Average.		Nebraska Farm Price.		Difference between Gazette Price and			
											Six States.		Nebraska.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1870-74	54	3	51	7	37	6	30	9	24	6	23	6	29	9
'75-79	47	–	47	10	33	4	27	7	23	6	19	5	23	6
'80-84	40	2	42	7	30	6	25	6	23	3	14	8	16	11
'85-89	31	2	33	6	25	1	22	9	19	6	8	5	11	8
'90-94	28	8	30	1	22	2	20	8	19	2	8	–	9	6
'95-99	28	8	29	10	21	5	20	–	17	6	8	8	11	2
Fall during period	25	7	21	9	16	4	10	9	7	–	14	10	18	7

Maize; Price per Quarter.

	United Kingdom Imports (December).		United States Farm Average.		Six States Farm Average.		Iowa Farm Price.		Difference between United Kingdom and			
									Six States.		Iowa.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1870-74	33	5	17	1	12	10	9	11	20	7	23	6
'75-79	28	1	12	3	8	9	7	10	19	4	20	3
'80-84	27	10	15	4	12	4	10	10	15	6	17	–
'85-89	22	3	11	10	9	9	8	10	12	6	13	5
'90-94	23	–	13	10	12	5	11	8	10	7	11	4
'95-99	17	–	8	10	7	2	6	4	9	6	10	8
Fall during period	16	5	8	3	5	8	3	7	10	9	12	10

This summary shows very clearly how much less has been the fall in price according as we approach the cheapest centre of production in the United States. While in the Gazette average there has been recorded a decline of 25*s.* 7*d.* per quarter of wheat, there has been in the six American wheat States a fall of only 10*s.* 9*d.* In Nebraska the fall has been one of 7*s.* only.

Looked at from another point of view, it will be seen that whereas in 1870-74 the difference[23] between the price of the wheat on the farm and its price in England was 23*s.* 6*d.*, it was in 1895-99 only 8*s.* 8*d.* per quarter. The deduction appears fair that in a quarter of a century that portion of the fall in the English price of wheat which is due to reduced cost of movement is just 15*s.* per quarter. If the comparison be made with Nebraska, the cheapest State, we find that the difference has fallen from 29*s.* 9*d.* to 11*s.* 2*d.*, *i.e.*, by 18*s.* 7*d.* Although comparisons with a single State are perhaps not very desirable, yet in the present instance, as it is precisely this State and its neighbours which have found it profitable to so enormously extend their area under wheat, it is not, I think, unreasonable to accept this higher figure as representing more nearly the reduction in cost of movement. This will appear more clearly when the westward shifting of the wheat centre is taken into account. Had we been able to include in 1870 the low prices of the Dakotas, which have so successfully competed with the more eastern States, the average for the earlier years would naturally have been lower, thereby reducing the apparent fall in the wheat centre.

The results exhibited by maize are more striking. The fall in England is 16*s.* 5*d.* per quarter, while in the maize belt it amounts to only 5*s.* 8*d.*, and in Iowa to 3*s.* 7*d.*; but even this decline has occurred entirely in the last quinquennium, during which the harvests of this cereal have, as is well known, been of exceptional abundance. It is distinctly interesting to notice that in the cheapest State, Iowa, the farm price of maize was, on the average of 1890-94, actually higher than in any of the four preceding quinquennia, and 1*s.* 9*d.* per quarter above 1870-74; while in the six States of the maize belt it was only 5*d.* per quarter lower than twenty years previously.

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[23] This difference in price between one point and another I shall call cost of movement, including in this term all cartage, freights, insurance, middlemen's profits, &c.

Comparing the maize belt with England, it appears that in 1870-74 the cost of movement was 20*s.* 7*d.* per quarter, and in 1894 9*s.* 10*d.*; thus showing a fall of 10*s.* 9*d.*, or, if Iowa be taken for comparison, of 12*s.* 10*d.*

That wheat on the farm should have fallen after 1870 in these States, while maize did not (until 1895), is probably to be explained by the fact that (apart from any causes affecting prices of commodities in general) the world's supply of wheat in 1870 was very largely derived from places where the cost of production, added to the cost of movement, was greater than the corresponding amount from the United States wheat-belt. The latter, furnishing but a small proportion of the then total supply, thus did not drive out dearer supplies and dictate the price. Hence the producers there then received more than average profits. The extraordinary subsequent development of wheat cultivation in this region confirms this view. Whereas the production of maize in the "corn belt" formed even at that date a very material portion of the world's supply, and the price was already intimately connected with local conditions. This is, I think, borne out by the following diagram, on which I have drawn curves showing the total maize crop of the United States and the price of maize in Iowa. There are, I fancy, few commodities of which the price movements have been so little disturbed by other conditions as to show so remarkable a correspondence with the supply during the past thirty years.

Total Production of Maize in the United States (in Thousands of Millions of Bushels to One Decimal), and Farm Price of Maize in Iowa (in Cents per Bushel).

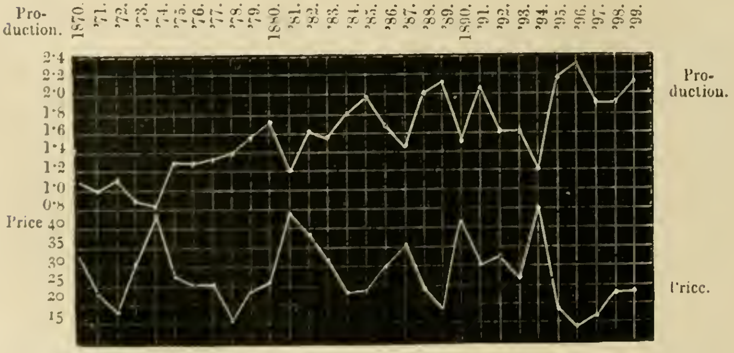


Diagram I.—Wheat: *Gazette Average and Farm Prices in United States, Six Central States, and Nebraska, in December of each Year:*

The lines on this Diagram are Cols. 1, 5, 6, 7, of Table 1.

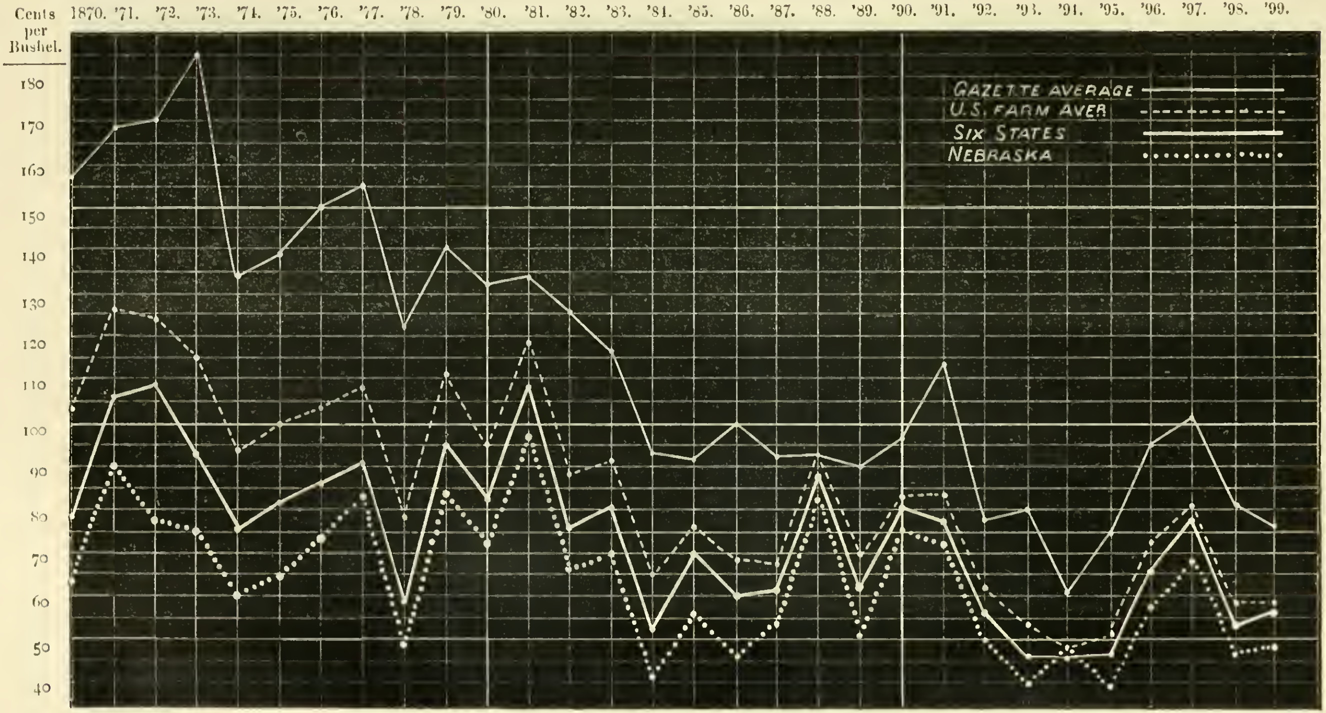
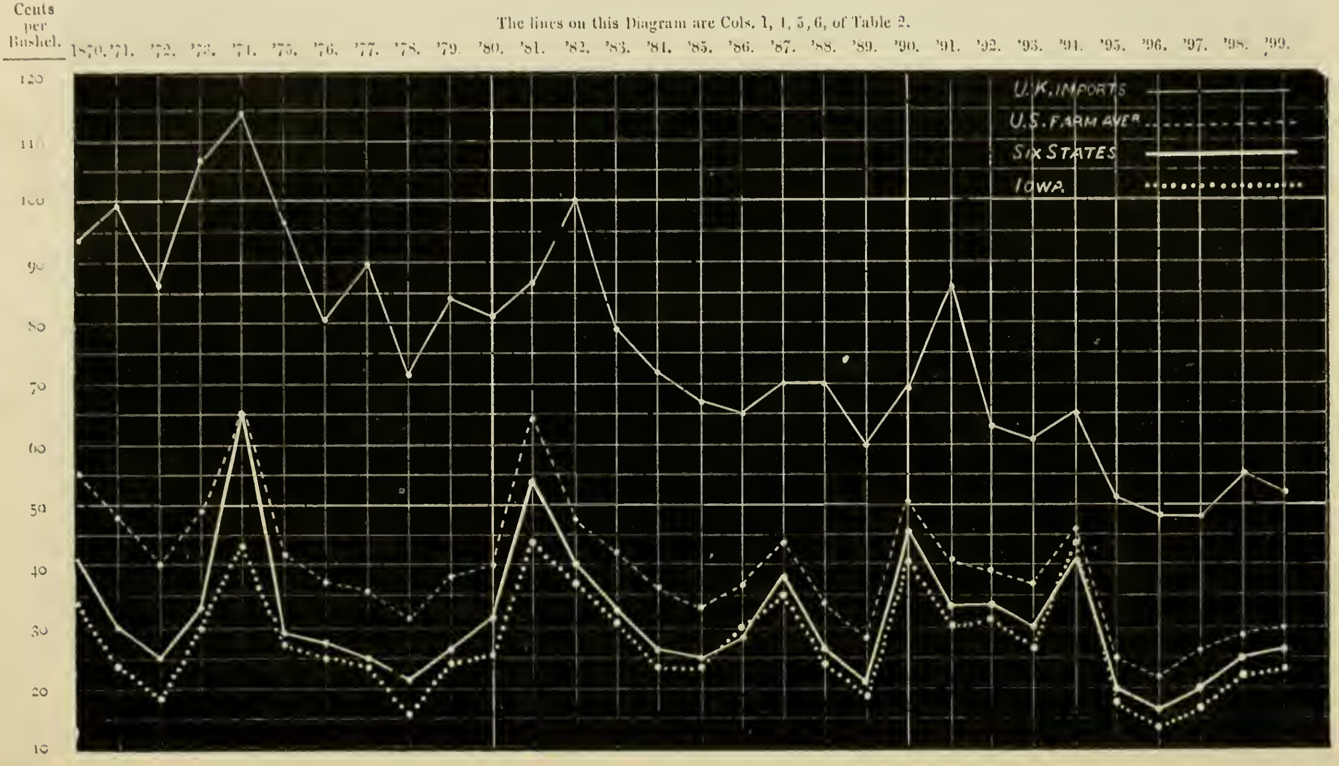


DIAGRAM 11.—MAIZE: *United Kingdom Import Values, and Farm Prices in United States, Six Central States, and Iowa, in December of each Year.*



The lines on this Diagram are Cols. 1, 4, 5, 6, of Table 2.

In the two tables at the end I have further included columns showing (1) the average export price of wheat and corn from the United States[24] (I can, unfortunately, only give these values for the whole year, and not the month of December; hence they are not always intermediate between the average farm price and the English import value); (2) the Chicago price during December of each year;[25] and (3) the farm price for Maine, where wheat and maize are dearest. This last is interesting, as showing how "remote" a district it is. Maine now produces very little wheat, having less than 2,000 acres under that cereal (18,000 acres in 1870), and not much maize, so that it has to import these grains. It will be seen that the farm price of wheat is there invariably, until 1896, higher than in England, while that of maize is about equal to our import value of this grain; while the fall in price, whether expressed in money or as a percentage, has been greater than in this country.

These tables and diagrams bring out clearly the effect which may safely be attributed to improvement in the machinery of movement as a factor in the fall of the prices of these commodities[26]; and the figures, more particularly those for maize, leave but small margin for the influence of "options" and gambling in farm produce, which are often alleged to be the ruin of agriculture by depressing the price paid to the farmer. The system of dealing in futures practically originated during the early seventies, and was completely established twenty years later. Maize, wheat, and cotton are, above all others, the three agricultural products in which the system of contracting for future delivery has attained it fullest development. Why then, it may be asked, did the farm price of maize in the great corn belt not fall during those twenty years? The subsequent decline is, as already noticed, amply accounted for by the abundant harvests.[27] How far the system of contracting for future delivery, by enabling holders of commodities to know when their goods will be wanted, and thus facilitating the adjustment of supply to demand, has contributed to cheapen rates of transport and reduce middlemen's charges, is practically impossible to say. It seems, however, clear that if, as theory would indicate, the system has facilitated the regulation of the supply, it has not done so to the prejudice of the farmer. Looking at the diagrams, it is difficult to avoid the conclusion that under the present conditions of trade the cost to the consumer has been very materially reduced, while the price received by favourably situated producers has either been maintained, as in the case of maize, or at least has not sunk below a level which yields a reasonable profit upon the outlay.

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[24] Years ending 30th June, 1871-1900.

[25] Figures taken from the Year-Book of the United States Department of Agriculture. The highest and lowest prices of the month are given; I have taken the mean of these two quotations.

[26] *Cf.* in this connection more especially the writings of Mr. Edward Atkinson, of New York, on reductions in freights.

[27] It may be noted also that during the forties values quite as low as, or lower than, those of the present day are recorded in Aldrich's *Return of Prices, Wages, and Transportation*, which quotes a price of 20—35 cents per bushel of wheat for January, 1843, and even of 15 cents per bushel of maize at the same period, at Chicago. I do not quite understand, however, what these quarterly quotations are, whether averages of three months or of the month named, or the price of a single day, although the grades (corresponding to the standards now in force) are stated clearly enough.

TABLE 1.—*Wheat. Prices in December; Cents per Bushel.*

Year.	Gazette Average.	United Kingdom Imports.	United States Exports (Year).	Chicago Price.	United States Farm Average.	Six Central States and Farm Average.	Nebraska Farm Price.	Maine Farm Price.
1870....	157	147	129	95	104	79	64	178
'71....	168	154	132	109	126	106	90	180
'72....	170	163	147	103	124	109	78	192
'73....	185	173	131	101	115	93	75	190
'74....	134	136	143	81	94	75	60	154
'75....	139	136	112	87	100	82	64	164
'76....	150	141	124	111	104	87	73	158
'77....	155	156	117	106	108	91	83	160
78....	122	127	134	83	78	59	49	131
'79....	140	157	107	128	111	95	84	144
1880....	132	141	125	102	95	83	73	147
'81....	134	147	111	127	119	109	97	156
'82....	125	127	119	93	88	76	67	140
'83....	117	121	113	97	91	81	70	140
'84....	93	97	107	73	65	53	42	125
'85....	92	98	86	86	77	70	57	125
'86....	100	99	87	77	69	60	47	120
'87....	93	95	89	77	68	61	53	105
'88....	93	106	85	101	93	88	83	120
'89....	90	98	90	79	70	63	52	100
1890....	97	103	83	90	84	81	76	115
'91....	113	118	93	91	84	78	73	110
'92....	78	86	103	71	62	57	50	102
'93....	80	77	80	62	54	47	40	102
'94....	62	67	67	58	49	47	49	79
'95...	75	72	58	59	51	47	40	82
'96....	95	95	65	84	73	66	58	84
'97....	102	106	75	101	81	78	69	106
'98....	81	89	98	66	58	54	47	89
'99....	77	85	75	67	58	56	49	91

TABLE 2.—*Maize. Prices in December; Cents per Bushel.*

Year.	United Kingdom Imports.	United States Exports (Year).	Chicago Price.	United States Farm Average.	Six Central States Farm Average.	Iowa Farm Price.	Maine Farm Price.
1870...	94	93	50	55	41	34	114
'71....	99	76	38	48	30	23	98
'72....	87	70	28	40	24	18	94
'73....	107	62	45	49	33	31	91
'74....	114	72	70	65	65	43	113
'75....	97	85	44	42	29	27	96
'76....	80	67	42	37	28	25	79
'77....	89	59	45	36	26	25	78
'78....	71	56	31	32	22	16	65
'79....	84	47	41	38	27	24	76
1880....	81	54	39	40	32	26	77
'81....	86	55	61	64	54	44	91
'82....	100	67	55	48	40	38	92
'83....	79	68	59	42	33	32	82
'84....	72	61	37	36	26	23	75
'85....	67	54	49	33	25	24	70
'86....	65	50	37	37	29	30	67
'87....	70	48	49	44	38	35	68
'88....	70	55	35	34	27	24	75
'89....	60	47	32	28	21	19	57
1890....	69	42	50	51	46	41	74
'91....	86	57	49	41	34	30	80
'92....	63	55	41	39	34	32	67
'93...	61	53	35	37	30	27	62
'94....	65	46	46	46	42	45	72
'95....	52	53	26	25	20	18	54
'96....	48	38	23	22	17	14	47
'97....	48	31	26	26	20	17	47
'98....	55	36	36	29	25	23	48
'99....	52	40	31	30	26	23	50

V.—*Progress of the Australasian Colonies.*

By a COLONIAL CONTRIBUTOR.

AT the present time, when the question of Federation of the Australasian Colonies is at last *un fait accompli*, the past and future progress of those colonies may be expected to have a special interest for the rest of the Empire. Years ago it was the fashion with the dominant school of home politicians to regard the colonies as a nuisance; and if these same colonies had taken it into their heads to "cut the painter," as the phrase then went, *i.e.*, to throw off the sovereignty of the old country, and set up housekeeping for themselves, these politicians would probably not have interposed a single objection, but would rather have thought it a good riddance. It was constantly asserted at that time that the colonies were a drain upon the mother country, without conferring any compensating advantage. But since then the tide has happily turned. The British public has come to see that the benefits have not all been on one side; that the colonies are carrying on a large and increasing trade with the old land; and that they offer a wide field for the investment of British capital, secure from the risks of war and foreign complications. The representation of the various dependencies of the crown at the Queen's jubilee tended greatly to this result, and the spontaneous offers of help in the present South African war have drawn still closer the bonds between the old mother and her children.

In carrying out the idea of this Paper it is proposed, first, to take a survey of the progress of the seven colonies of Australasia as a whole, and then to see what part in it each member of the group has played. And in doing this I shall make use of the figures supplied by the able Government Statistician of New South Wales, Mr. T. A. Coghlan, an Honorary Fellow of the Royal Statistical Society, in the latest edition of his publication entitled, *Statistics of the Seven Colonies of Australasia*, 1861 *to* 1898.

First, then, for the colonies in the general. Dropping fractions, and taking the nearest whole number, we find that between 1861 and 1898 the population increased by 266 per cent.; the shipping (inwards and outwards) by 672 per cent.; the imports by 157 per cent.; the exports by 208 per cent.; the total sea-borne trade by 182 per cent.; the exports of domestic produce by 191 per cent.; the public (or State) revenue by 419 and the expenditure by 243 per cent.; while the State debt increased by 1,904 per cent. The increase in the debt as compared with that of the revenue seems at first sight to be excessive; but we must take into consideration the purposes for which the loans were contracted, and the immense extent of territory over which the population is spread. It is worthy of note that, while the increase on the debt was 1,904 per cent., the increase on the mileage of railways open for traffic was 6,037 per cent. The State debt of the seven Australasian colonies (which might, perhaps, not inaptly be called "The Southern Heptarchy") in 1861 was nearly 12 millions, and in 1899 nearly 238½ millions. The debt in the latter year was about equal to 7·3 times the revenue, from ordinary sources, of that year. About 60 per cent. of the debt appears to have been raised for the construction of railways, and therefore for the development of the colonies, and the encouragement of production.

The number of sheep increased by 323 per cent., and the quantity of wool by 680 per cent. The production of wool therefore increased in a greater ratio—more than double—than the sheep, more attention having been paid to the improvement of the breed. For this purpose 21,063 stud sheep, valued at 114,750*l.* were exported from Tasmania to the other colonies in the five years 1894 to 1898.

The exports of domestic produce do not differ greatly in the rate of increase, which was 191 per cent., from the general exports.

The export of wool from all the seven colonies (imports being deducted) amounted in 1861 to 84,636,800 lbs., and in 1898 to 660,612,993 lbs. In the same period the number of sheep in the same colonies increased from 23,741,706 to 100,463,502.

The value of minerals produced in 1898 is returned as 18,216,357*l.*; and the total value (as far as could be ascertained) up to and including that year, 537,841,983*l.*, of which gold contributed approximately 412 millions, silver and silver-lead 29 millions, copper 29 millions, and tin 18 millions.

The working of the rich "reefs" of Western Australia, and of the immense deposits of copper, silver-lead, and tin ore on the west coast and other parts of Tasmania, and of the metalliferous beds and banks of rivers in most of the colonies by means of dredging and sluicing, to which attention has lately begun to be turned, must in a short time greatly augment the output of the mines.

Agriculture may be gauged by the area of land in crop, the increase of which in the period was at the rate of 676 per cent.

The telegraphs progressed in the period 1871 to 1898 at the rate of 264 per cent.

Mr. Coghlan's publication does not give us the means of comparing the transactions of the banks of issue for the period, but their total liabilities at the middle of 1899 are set down as 104,757,150*l.*, and the assets as 130,686,242*l.* The aggregate deposits in these banks at that date amounted to more than 99¼ millions.

The savings banks, as between 1871 and 1898, showed increases in the number of depositors of 811 per cent., and in the amount of deposits of 766 per cent.

It may be remarked that these colonies possessed between them the immense area of 3 millions of square miles, nearly as large as that of British North America, and more than three times as large as that of British India, with its (say) 250 millions of people. As regards size, therefore, Australasia is, next to Canada, the largest of the British possessions.

Having thus taken a rapid review of the progress of the Australasian colonies as a whole, it remains to see what advance each member of the group has made in the same period.

For the sake of greater clearness, I shall present the actual figures first, and the percentages, calculated from them, afterwards in a separate form.

1. *Population.*

Beginning with population, we find that that of New South Wales in 1861 was 348,546, and in 1898, 1,346,240, the increase being 997,694, very nearly a million in the thirty-eight years.

In Victoria the population in 1861 was 537,847, and in 1898, 1,175,463, the increase being 637,616.

Queensland was not made an independent colony till 1859, and its beginnings were small. The population, which in 1870 was 115,567, had grown to 498,523 in 1898, an increase of 382,956.

South Australia in 1861 had a population of 124,112, which, at the end of 1898 had increased to 367,800, the gain being 243,688.

The progress of Western Australia in late years has been phenomenal. In 1861 there were only 15,227 persons within its vast territories,—for it is the most extensive of all the Australasian colonies,—comprising 975,920 square miles. So late as 1890 the population was only 46,290; but the discovery subsequently of auriferous lodes of exceptional richness brought such a large accession, that in 1898 it had jumped up to 168,129, the gain being 152,902.

Tasmania in 1861 had a population of 87,775, which by 1898 had reached 177,340, the increment being 89,565.

The progress of New Zealand was notable, the numbers being, in 1861, 79,711, and in 1898, 743,463.

2. *Shipping.*

Taking next shipping, inwards and outwards, it is found that the tonnage was—

Colony.	For 1861.	For 1898.	Increase.
	Tons.	Tons.	Tons.
New South Wales	745,696	6,919,928	6,174,232
Victoria	1,090,002	4,956,737	3,866,735
Queensland..............	117,407[28]	1,198,319	1,080,912
South Australia.........	199,331	3,667,526	3,468,195
Western Australia......	115,256	2,389,626	2,274,370
Tasmania	230,218	1,158,993	928,775
New Zealand	403,336	1,531,048	1,127,712

3. *Imports.*

The total imports into the different colonies between 1861 and 1898, and the numerical increases, were as follows:—

Colony.	For 1861.	For 1898.	Increase.
	£	£	£
New South Wales	6,604,069	24,453,560	17,849,491
Victoria	13,532,452	16,768,904	3,236,452
Queensland..............	1,562,665	6,007,266	4,444,601
South Australia.........	1,976,018	6,298,765	4,322,747
Western Australia......	147,913	5,241,965	5,094,052
Tasmania	954,517	1,650,018	695,501
New Zealand	2,493,811	8,230,600	5,736,789

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[28] The years prior to 1871 hardly afford a fair comparison, and this year has therefore been taken generally as the starting point.

4. *Exports.*

Colony.	For 1861.	For 1898.	Increase.
	£	£	£
New South Wales	6,609,461	27,648,117	21,038,656
Victoria	13,828,606	15,872,246	2,043,640

The difference between these two colonies of the group is very striking. In 1861 the exports of Victoria (as also the imports) were more than double those of New South Wales; by 1898 they had fallen a long way behind.

Queensland	2,760,045	10,856,127	8,096,082
South Australia	2,032,311	6,978,370[29]	4,946,059
Western Australia......	95,789	4,960,006	4,864,217

The amount in 1898 was therefore nearly fifty-two times that of 1861.

Tasmania	905,463	1,803,369	897,906
New Zealand	1,370,247	10,517,955	9,147,708

The exports, as between these dates, increased by between seven- and eight-fold.

5. *Agriculture.*

Agriculture, as has been said, may be gauged by the area under crop.

Colony.	For 1861.	For 1898-99.	Increase.
	Acres.	Acres.	Acres.
New South Wales	265,389	2,206,500	1,941,111
Victoria	410,406	3,210,445	2,800,039
Queensland...............	59,969[30]	363,159	303,190
South Australia.........	400,717	2,211,814	1,811,097
Western Australia......	24,705	171,164	146,459
Tasmania	163,385	258,542	95,157
New Zealand	68,506	1,964,022	1,895,516

6. *Railways and Telegraphs.*

In 1861, in all the colonies, there were only 243 miles of railway open for traffic. By 1898-99 these had increased to 14,913 miles.

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[29] Of this sum 1,931,249*l*. was the value of external products, principally from the mines at Broken Hill, conveyed to and shipped from South Australian ports.

[30] For 1871, information for 1861 not being available.

In the former year only three of the colonies (New South Wales, Victoria, and South Australia) were possessed of these conveniences. In 1871 they were to be found in all except Western Australia. Starting therefore from that date there were—

Mileage of Railways Open.

Colony.	For 1871.	For 1898-99.	Increase.
	Miles.	Miles.	Miles.
New South Wales	358	2,791	2,433
Victoria	276	3,143	2,867
Queensland...............	218	2,475	2,257
South Australia.........	133	1,889	1,756
Western Australia......	92*	1,850	1,758
Tasmania	45	508	463
New Zealand	105	2,257	2,152

* For the year 1881.

Between about 1871 and 1898 the mileage of telegraph lines in the seven colonies increased from 13,773 to 49,992.

7. *State Revenue and Expenditure.*

Colony.	For 1861.	For 1898-99.	Increase.
New South Wales—	£	£	£
Revenue	1,421,831	9,754,185	8,332,354
Expenditure[31].........	1,540,005	9,734,417	8,194,412
Victoria—			
Revenue	2,952,101	7,378,842	4,426,741
Expenditure	3,092,021	7,027,415	3,935,394
Queensland—			
Revenue	799,005[32]	4,174,086	3,375,081
Expenditure	787,555[32]	4,024,170	3,236,615
South Australia—			
Revenue	558,587	2,731,208	2,172,621
Expenditure	482,951	2,777,614	2,294,663
Western Australia—			
Revenue	67,261[32]	2,478,811	2,411,550
Expenditure	98,248[32]	2,539,358	2,441,110
Tasmania—			
Revenue	256,958	908,223	651,265
Expenditure	324,447	830,168	505,721
New Zealand—			
Revenue	1,342,116*	5,258,228	4,566,764
Expenditure	931,768[32]	4,858,511	3,926,743

* The revenue of New Zealand in 1861 was 691,464*l*.

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[31] Expenditure from loans in all cases excluded.

[32] For 1871, information for 1861 not being available.

8. *State Debt.*

The State debts of the individual Colonies were as follows:—

Colony.	For 1861.	For 1899.	Increase.
	£	£	£
New South Wales	4.017.630	63,761,666	59,744,036
Victoria	6,345,060	50.379,277	44,034,217
Queensland	4,047,850[33]	33,598,414	29,550,564
South Australia	866,500	24.916.310	24,049,810
Western Australia......	511,000[34]	10,488,363	9,977,363
Tasmania	1,315,200[33]	8.412,904	7,097,704
New Zealand	600,761	46,938,006	46,337,245

As to the amount per head in 1899, South Australia had the largest, 67*l.* 9*s.* 8*d.*, Queensland coming very near with 66*l.* 2*s.* 9*d.*. New Zealand with 62*l.* 18*s.* 11*d.*, and Western Australia with 62*l.* 5*s.* 1*d.*, being not far behind, the three remaining colonies, Tasmania (47*l.* 8*s.* 9*d.*), New South Wales (46*l.* 19*s.* 8*d.*), and Victoria (42*l.* 16*s.* 2*d.*), keeping their indebtedness to between 40*l.* and 50*l.* per head.

9. *Savings Banks.*

The number of depositors in savings banks, and the total amount of their deposits as between the years 1871 and 1898-99, is shown to have been as under:—

Colony.	For 1871.[33]	For 1898-99.	Increase.
New South Wales—			
Depositors	24,379	242.365	217,986
Deposits	945,915*l.*	9,480,944*l.*	8,535,029*l.*
Victoria—			
Depositors	45,819	355,619	309,800
Deposits	1,117,761*l.*	8,517,005*l.*	7,399,244*l.*
Queensland—			
Depositors	6,769	76,011	69,242
Deposits	407,134*l.*	3,171,047*l.*	2,763,913*l.*
South Australia—			
Depositors	14,270	109,968	95.698
Deposits	517,000*l.*	3,080,514*l.*	2,563,514*l.*
Western Australia—			
Depositors	1,062	28,754	27,692
Deposits	15,583*l.*	1,063,310*l.*	1,047,727*l.*
Tasmania—			
Depositors	8,500	36,619	28,119
Deposits	217,413*l.*	788,125*l.*	570,712*l.*
New Zealand—			
Depositors	14,275	199,464	185,189
Deposits	454,966*l.*	5,746,887*l.*	5,291,921*l.*

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[33] For 1871, information for 1861 not being available.

[34] For 1881.

The preceding tables have shown the actual figures for the first and last years of the period in each case, and the difference between them, being the increase in the whole period.

The increases may be better compared by reducing them to a common standard; and this has been done for each of the colonies, as will be seen in the tables following.

1. *Population.*

	Increase per Cent., 1860-98.
New South Wales	286·25
Victoria	118·55
Queensland (from 1870).	331·37
South Australia	196·34
Western ,,	1,004·15
Tasmania	102·03
New Zealand	832·69

2. *Shipping, Inwards and Outwards.*

	Increase per Cent., 1861-98.
New South Wales	827·98
Victoria	354·74
Queensland (from 1871).	920·64
South Australia[35]	1,739·89
Western ,,	1,973·32
Tasmania	403·43
New Zealand	279·59

3. *Imports.*

	Increase per Cent., 1861-98.
New South Wales	270·28
Victoria	23·92
Queensland (from 1871).	284·42
South Australia	218·76
Western ,,	3,443·95
Tasmania	72·86
New Zealand	230·04

4. *Exports.*

	Increase per Cent., 1861-98.
New South Wales	318·31
Victoria	14·78
Queensland (from 1871).	293·33
South Australia	243·37
Western ,,	5,078·05
Tasmania	99·16
New Zealand	667·59

4A. *Exports of Domestic Produce.*

	Increase per Cent., 1861-98.
New South Wales	253·35
Victoria	11·16
Queensland (from 1871).	335·34
South Australia	45·04
Western ,,	4,974·13
Tasmania	105·25
New Zealand	670·95

4B. *Total Sea-Borne Trade.*

	Increase per Cent., 1861-98.
New South Wales	294·30
Victoria	19·27
Queensland (from 1871).	290·11
South Australia	231·24
Western ,,	4,086·25
Tasmania	85·67
New Zealand	385·20

5. *Agriculture: Area in Crop.*

	Increase per Cent., 1861—1898-99.
New South Wales	731·42
Victoria	682·26
Queensland (from 1871)	505·58
South Australia	451·96
Western ,,	592·83
Tasmania	58·37
New Zealand	2,766·93

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[35] Traffic from Broken Hill Mines goes to South Australian ports.

6. *Railways and Telegraphs.*

It has not been thought necessary to calculate the rate of increase for each separate colony. For the whole group the rates per cent. for the period from 1861 to 1898 were—

Railways	6,037·00	Telegraphs	264·02

Nothing perhaps could better evidence the wonderful growth of the Australasian colonies than this increase of more than 6,000 per cent. in the mileage of railways constructed in about thirty-eight years; and yet this is only a very small part of the work which has yet to be done to open up these immense territories.

7. *State Revenue and Expenditure.*

	Increase Per Cent.	
	Revenue.	Expenditure.
New South Wales	586·03	532·10
Victoria	149·95	127·27
Queensland (from 1871)	422·49	410·97
South Australia	388·95	475·12
Western Australia	3585·36	2484·64
Tasmania	253·45	155·87
New Zealand	660·45	421·43*

* From 1871. Expenditure for 1861 not stated.

8. *State Debt.*

	Increase per Cent., 1861-99.		Increase per Cent., 1861-99.
New South Wales	1,487·05	Western Australia (from 1881)................................	1,952·52
Victoria	694·00		
Queensland (from 1871)	730·03	Tasmania (from 1871)	539·67
South Australia	2,769·13	New Zealand	7,713·09

9. *Savings Banks.*

	Increase per Cent., 1871—1898-99.	
	On Depositors.	On Deposits.
New South Wales................................	894·15	902·34
Victoria	676·13	661·97
Queensland.......................................	1,022·92	678·87
South Australia..................................	670·62	495·84
Western ,, ...	2,607·53	6,723·52
Tasmania	330·81	262·50
New Zealand	1,297·29	1,163·14

Taking the seven colonies as a whole, the rates of increase under the following heads between 1861[36] and 1898 were these:—

	Per Cent.		Per Cent.
Population	266·58	Wool produced	680·53
Shipping, inwards and outwards	672·16	Railways: miles open for traffic[37]	6,037·04
Imports, general	157·34	Telegraphs, land: miles of line (1871[38]-98)	264·03
Exports, ,,	207·76	State revenue	418·60
,, domestic produce	191·44	,, expenditure	243·43
Total sea-borne trade	182·01	,, debt	1,904·23
Land in crop	676·47	Savings banks: depositors	811·41
Number of sheep	323·15	,, deposits	766·43

It will be interesting to compare the rate of progress of the Dominion of Canada, the most important, after India, of the British possessions. The following figures show the increase per cent. in two periods, the one of twenty-eight years, from 1868 to 1895, taken principally from the *Statistical Year-Book of Canada*, the other of fifteen years, from 1884 to 1898, taken from the *Statistical Abstract of the Board of Trade* for those years. In making the calculations the last three figures were omitted. The figures will therefore not be so minutely accurate as those in the preceding tables:—

	Increase per Cent.	
	1868-95 (Twenty-eight Years).	1884-98 (Fifteen Years).
Population (1881-98)	—	21·14
Shipping	154·15	47·50
Imports	50·81	15·30
Exports	97·40	70·52
Total trade	71·29	39·82
State revenue	148·23	24·97
,, expenditure	182·75	25·13
,, debt	241·82*	43·07
Railways: miles in operation	229·96†	—
Savings banks deposits	1,038·37	—

* 1875-98. † 1875-95.

It will be seen that in every item except deposits in savings banks, the rate of progress was very much greater in the southern colonies; in fact it appears that in those colonies it was greater than in any other part of the Queen's vast dominions. And when all the obstacles to freedom of interchange which have hitherto impeded their development are removed by federation, and each can produce those things for which it is by nature best fitted, and can seek a market for them among a people numbering four and a half millions, who can say to what height of further prosperity they may not attain in the next quarter of a century? And when South Africa is pacified and brought under a just government, its several States will, no doubt, be federated. Then the four great divisions, India, Canada, Australasia, and South Africa, will form such a Colonial Empire as the world has never yet seen—an empire bound to the sovereign State not by despotic power, but by the natural affection of children for an honoured parent, and by the strong ties of mutual help and advantage.

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[36] This not quite statistically accurate, since, as the author himself has told us, he is working in some cases, not from the figures of 1861 (they not in all cases being available), but from those of 1871, and even in one or two cases of 1881. The point, however, makes against and not in favour of his case.—Ed.

[37] In 1861 there were only 243 miles open, and in only three colonies. In 1871 there were railways in all the colonies except Western Australia, the increase from that date being 1,213·92.

[38] And 1873.

There is one other factor in the prosperity of the Australasian colonies which is not dealt with in their collective statistics as fully as could be wished, but which is of immense importance,—namely, the mining industry. A large proportion of the world's supply of gold and silver is derived from these colonies. The value of minerals produced by them in 1898, as appears from Mr. Coghlan's figures, was, in round numbers, 18¼ millions, to which gold contributed nearly 13 millions, and silver 2 millions. Their total mineral output to the end of the year 1898, so far as can be ascertained, is valued at nearly 538 millions sterling, the yield of gold being 412¼ millions, of silver 29¼ millions, of copper 18 millions, and of coal 44¼ millions. Victoria, with its 251 millions worth, has been the chief producer of gold; but Western Australia, with its enormous territory yet to be exploited, and its already discovered "reefs," some of them phenomenally rich, will probably in a few years have attained a foremost place in regard to the supply of gold.

There is a field in the Australasian colonies for the profitable employment of a large amount of capital, provided it is judiciously applied. What has done much harm to the mining interest is the overloading of companies by nominal capital for the sole benefit of promoters. This system has had the effect of disgusting *bonâ fide* investors, and bringing discredit on mining as a means of employing capital. In my own colony of Tasmania there are numerous deposits of ore of different kinds, often very wide, though of comparatively low grade, which would abundantly repay the capitalist for an adequate outlay. In the Mount Lyell district alone the value of ore already discovered is reckoned by tens of millions of pounds; and concealed under the dense forests, and in the vicinity of Mounts Reid, Tyndale, Darwin, Jukes, Zeehan, and Dundas, equally valuable deposits may be found to exist. It is impossible to forecast or to place any limit to what the wealth of the western district of Tasmania may ultimately be. Besides these mineral treasures, there are in other parts of the colony millions of tons of the purest iron ore, to which some degree of attention is now being directed. In the development of our mines there is a great opportunity for the profitable employment of a large amount of capital, to the common advantage of both promoters and shareholders.

VI.—*Agricultural Returns of the United Kingdom for* 1900. *Acreage under Crops and* 1900, *and 4th June*, 1899, *in each Division of Great Britain;*

	England.		Wales.		Scotland.	
	1900.	1899.	1900.	1899.	1900.	1899.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Total area of land and water[a]	32,549,019	32,549,019	4,774,618	4,774,618	19,458,416	19,458,416
Total acreage under crops and grass[b]	24,713,790	24,735,961	2,824,350	2,823,456	4,899,256	4,897,690
Corn Crops—						
Wheat	1,744,556	1,899,827	51,654	53,898	48,832	47,256
Barley or bere	1,645,022	1,635,634	105,048	105,978	240,195	240,496
Oats	1,860,513	1,781,649	216,447	220,233	949,128	957,873
Rye	46,102	43,951	1,464	1,625	5,998	6,660
Beans	248,828	234,528	1,288	1,338	13,124	13,190
Peas	154,295	159,887	1,542	1,665	1,372	1,199
Total	5,699,316	5,755,476	377,443	384,737	1,258,649	1,266,674
Green Crops—						
Potatoes	396,936	387,715	33,225	32,982	131,200	126,985
Turnips and swedes	1,160,391	1,203,880	62,981	66,836	465,234	470,277
Mangold	401,913	363,302	9,842	8,855	2,661	1,785
Cabbage, kohl-rabi, and rape	177,857	156,490	3,848	3,579	13,978	12,967
Vetches or tares	166,718	174,529	1,545	1,531	9,688	9,831
Other green crops	138,562	124,040	1,049	1,041	2,494	2,478
Total	2,442,377	2,409,956	112,490	114,824	625,255	624,323
Clover, sainfoin, and grasses under rotation—						
For hay	1,598,566	1,622,603	196,992	198,046	406,223	394,234
Not for hay	1,169,472	1,184,007	199,690	196,641	1,188,215	1,212,420
Total	2,768,038	2,806,610	396,682	394,687	1,594,438	1,606,654
Permanent pasture or grass not broken up in rotation—[b]						
For hay	3,776,473	3,753,867	464,870	457,173	131,756	128,045
Not for hay	9,615,404	9,570,293	1,464,175	1,462,437	1,276,357	1,258,932
Total	13,391,877	13,324,160	1,929,045	1,919,610	1,408,113	1,386,977
Flax	457	465	9	10	1	1
Hops	51,308	51,843	—	—	—	—
Small fruit	66,749	64,867	1,109	1,106	5,922	5,553
Bare fallow	293,668	322,584	7,562	8,482	6,878	7,508
	No.	No.	No.	No.	No.	No.
Horses used solely for agriculture[g]	834,063	839,345	90,955	91,097	153,353	154,953
Unbroken horses—						
1 year and above	224,284	230,547	40,863	41,635	30,330	32,444
Under 1 year	93,974	93,920	21,466	21,242	10,855	11,447
Total of horses	1,152,321	1,163,812	153,284	153,974	194,538	198,844
Cows and heifers in milk or in calf	1,899,623	1,945,677	287,014	285,794	434,264	439,789
Other cattle—						
2 years and above	1,036,052	1,007,770	92,806	86,556	243,674	246,984
1 year and under 2	990,006	931,927	185,555	169,195	285,247	287,389
Under 1 year	923,017	956,478	193,011	195,146	234,901	243,015
Total of cattle	4,848,698	4,841,852	758,386	736,691	1,198,086	1,217,177
Ewes kept for breeding	6,011,818	6,096,168	1,360,245	1,332,756	2,978,263	3,031,913
Other sheep—						
1 year and above	3,454,142	3,489,128	874,674	854,906	1,635,053	1,696,566
Under 1 year	6,378,753	6,676,121	1,197,597	1,228,695	2,701,681	2,832,501
Total of sheep	15,844,713	16,261,417	3,432,516	3,416,357	7,314,997	7,560,980
Sows kept for breeding	279,782	317,041	36,130	40,884	16,609	17,986
Other pigs	1,741,640	1,908,379	191,967	217,270	115,804	122,253
Total of pigs	2,021,422	2,225,420	228,097	258,154	132,413	140,239

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[a] Not including foreshore and tidal water.

[b] Not including mountain and heath land.

[c] Furnished by the Department of Agriculture and Technical Instruction for Ireland.

Grass; and Number of Horses, Cattle, Sheep, and Pigs; as returned upon the 5th June, with Particulars for Ireland, and Total for the United Kingdom.

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1900.	1899.	1900. [c]	1899.	1900.	1899.	
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
56,782,053	56,782,053	20,706,258	20,706,258	77,681,644	77,681,644	Total area of land and water [a]
32,437,386	32,457,107	15,229,017	15,215,357	47,789,444	47,795,270	Total acreage under crops and grass [b]
						Corn Crops—
1,845,042	2,000,981	53,797	51,859	1,901,014	2,055,283	Wheat
1,990.265	1,982,108	174,184	169,660	2,172,140	2,159,396	Barley or bere
3,026,088	2,959,755	1,104,848	1,135,675	4,145,633	4,109,964	Oats
53,564	52,236	11,410	12,111	65,047	64,440	Rye
263 240	249,056	2,296	1,988	265,742	251,191	Beans
157,209	162,751	443	426	157,815	163,325	Peas
7,335,408	7,406,887	1,346,978	1,371,719	8,707,391	8,803,599	Total
						Green Crops—
561,361	547,682	654,413	662,898	1,227,569	1,222,614	Potatoes
1,688,606	1,740,993	297,895	301,455	1,994,421	2,050,422	Turnips and swedes
414.416	373,942	68,838 [d]	62,714 [d]	484,050	437,307	Mangold
195,683	173,036	47,071 [e]	46,057 [e]	242,967	219,283	Cabbage, kohl-rabi, and rape
177,951	185,891	3,382	3,541	181,679	189,769	Vetches or tares
142,105	127,559	27,272	25,326	171,088	154,668	Other green crops
3,180,122	3,149,103	1,098,871	1,101,991	4,301,774	4,274,063	Total
						Clover, sainfoin, and grasses under rotation—
2,201,781	2,214,883	607,367	624,118	2,822,418	2,852,544	For hay
2,557,377	2,593,068	610,642	627,144	3,201,899	3,253,288	Not for hay
4,759.158	4,807,951	1,218,009	1,251,262	6,024,317	6,105,832	Total
						Permanent pasture or grass not broken up in rotation— [b]
4,373.099	4,339,085	1,558,084	1,494,459	5,936,717	5,839,379	For hay
12.355,936	12,291,662	9,947,103	9,947,859	22,324,812	22,261,293	Not for hay
16,729.035	16,630,747	11,505,187	11,442,318	28,261,529	28,100,672	Total
467	476	47,327	34,986	47,794	35,463	Flax
51,308	51,843	—	—	51,308	51,843	Hops
73.780	71,526	4,356	4,809	78,687	76,772	Small fruit
308,108	338,574	8,289	8,272	316,644	347,026	Bare fallow
No.	No.	No.	No.	No.	No.	
1,078,371	1,085,395	— [f]	— [f]	— [f]	— [f]	Horses used solely for agriculture [g]
						Unbroken horses—
295,477	304,626	— [f]	— [f]	— [f]	— [f]	1 year and above
126.295	126,609	— [f]	— [f]	— [f]	— [f]	Under 1 year
1,500,143	1,516,630	491,143	501,982	2,000,402	2,028,092	Total of horses
2,620,901	2,671,260	1,458,130	1,443,819	4,096,738	4,133,249	Cows and heifers in milk or in calf
						Other cattle—
1,372,532	1,341,310	1,030,903	1,011,548	2,408,217	2,357,207	2 years and above
1,460,808	1,388,511	1,033,906	993,300	2.504,685	2,391,250	1 year and under 2
1,350 929	1,394,639	1,085,504	1,058,605	2,445,262	2,462,990	Under 1 year
6,805,170	6,795,720	4,608,443	4,507,272	11,454,902	11,344,696	Total of cattle
10,350,326	10,460,837	2,585,932	2,554,632	18,941,887	19,097,534	Ewes kept for breeding
						Other sheep—
5,963,869	6,040,600					1 year and above
10,278,031	10,737,317	1,800,765	1,809,444	12,112,660	12,582,691	Under 1 year
26,592,226	27,238,754	4,386,697	4,364,076	31,054.547	31,680,225	Total of sheep
332 521	375,911	— [f]	— [f]	— [f]	— [f]	Sows kept for breeding
2,049,411	2,247,902	— [f]	— [f]	— [f]	— [f]	Other pigs
2,381,932	2,623,813	1,268,474	1,363,311	3,663,669	4,003,589	Total of pigs

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[d] Including beetroot.

[e] Cabbage and rape only.

[f] Not separately shown for Ireland.

[g] Including mares kept for breeding.

Produce of Wheat, Barley, and Oats. Preliminary Statement showing the Estimated Total Produce and Yield per Acre of Wheat, Barley, and Oats in Great Britain in the Year 1900, *with Comparative Statements for the Year* 1899, *and for the Average of the Ten Years* 1890-99.

WHEAT.

	Estimated Total Produce.		Acreage.		Estimated Yield per Acre.		Average of the Ten Years 1890-99.
	1900.	1899.	1900.	1899.	1900.	1899.	
	Bshls.	Bshls.	Acres.	Acres.	Bshls.	Bshls.	Bshls.
England	49,528,385	62,380,067	1,744,556	1,899,827	28·39	32·83	30·15
Wales	1,332,299	1,380,938	51,654	53,898	25·79	25·62	24·15
Scotland	1,779,125	1,768,320	48,832	47,256	36·43	37·42	36·98
Great Britain.	52,639,809	65,529,325	1,845,042	2,000,981	28·53	32·75	30·15
			BARLEY.				
England	50,977.265	56,164,313	1,645,022	1,635,634	30·99	34·34	33·44
Wales	3,341,872	3,328,494	105,048	105,978	31·81	31·41	30·10
Scotland	7,995,373	8,222,891	240,195	240,496	33·29	34·19	36·20
Great Britain.	62,314,510	67,715,698	1,990,265	1,982,108	31·31	34·16	33·50
			OATS.				
England	73,604,178	73,905,288	1,860,513	1,781,649	39·56	41·48	40·80
Wales	7,238,305	7,527,952	216,447	220,233	33·44	34·18	33·20
Scotland	34,005,054	33,313,304	949,128	957,873	35·83	34·78	36·55
Great Britain.	114,847,537	114,746,544	3,026,088	2,959,755	37·95	38·77	38·81

VII.—*Notes on Economical and Statistical Works.*

Les Lois de la Population et leur application à la Belgique. Par G. Cauderlier. 572 pp., la. 8vo. Paris: Guillaumin, 1900. 20 frs.

It is not Belgium alone whose population is considered and whose demographical statistics are analysed in this lengthy treatise. France, Germany, Holland, and England, Scotland, and Ireland also contribute material, while some use is made of parts of other countries' records. The author fails to appreciate what other investigators have done; for it seems to us that (to quote one instance) to modify the old generalisation connecting the marriage-rate and the price of corn, so as to make it a connection between marriage-rate and "the ease of obtaining the necessaries of life," is not of the nature of a startling new discovery antagonistic to general current doctrine. The use of the proportion of marriages to marriageables, rather than to total population, too, gives admittedly a more accurate measure of the intensity of the phenomenon in question, and of variations in that intensity. Were it not for the constant claim to have made new discoveries in such principles which the volume contains, it might be accepted as a useful collection of material, arranged so as to show how older views have needed modification in the light of modern experience.

The comparison of statistics of various countries shows a curious gradation in birth-rates in Europe, from a maximum in Russia to lower and lower levels as we move outwards from the centre, reaching in Ireland and France the lowest points. Southern Europe does not fit into the scheme, unless the author's suggestion of a second culminating point in Northern Africa be accepted, in which case the countries in the south of Europe would lie between that maximum and the lower levels of Central and Western Europe. The map by which the figures are supposed to be illustrated is merely an outline map on which the rates of the various countries are printed. A much smaller cartogram would have been more effective.

Among the theories advanced in the volume is one which possesses some attractive features, relating to the comparative fertility of marriages in different countries. The author suggests that fertility is mainly dependent on the duration of marriages, and that (to simplify the handling of the problem) we may divide the married couples into five groups according to the period which has elapsed since marriage, each group covering three years, the five covering fifteen years. Births occurring more than fifteen years after marriage are neglected, as being very few in number. In place of one index of fertility, to be applied to all marriages indiscriminately, we shall have five indices, decreasing gradually, to be applied to these five groups respectively. Our author assumes that these indices (multiplied by a factor representing the proportionate decrease of married couples, through death, &c., in the interval since marriage, since the two factors cannot at present be separately determined) are in the proportions of the numbers 5, 4, 3, 2, 1. On that basis he finds principal indices approximately equal for all the countries examined. The Belgian index is the lowest, the Dutch the highest, the ratio between these being, roughly, 7 to 8. For France, however, he has assumed a more rapid rate of decrease of the indices than for other countries, the indices being in the ratios of 30, 20, 10, 3, and the series being complete with four terms.

We have tested the above assumption on the English figures, and find that, in spite of the striking accord shown by M. Cauderlier, it is not, in its present form, tenable. If it hold for a series of consecutive triennia beginning in 1872, as he shows; it certainly does not hold, with the same index, if we begin at 1873 or 1874 in the series, thus taking 1873-75, &c., or 1874-76, &c., in place of the 1872-74, &c., of our author. An attempt to obtain five indices without assuming the regular relation between them which M. Cauderlier uses, led to self-contradictory results. It is to be observed that the records of births which are associated with the records of marriages by the formula in question are taken by the author without exclusion of illegitimate births, at any rate in his English figures. We will not say that the apparent differences in fertility between different countries may not prove to be closely related to the differences of duration of marriage, but we cannot accept the suggestion that, if the necessary facts were accurately known, the index of fertility would be found to be the same for all countries, and, moreover, to be independent of average age at marriage, as our author finds.

We will not lengthen this notice unduly by dealing with the large section of the book which treats of mortality, except to say that it does not betray an adequate sense of the importance of life-tables, the construction of which is not quite so simple a matter as is that of the tables which the author uses in their place.

Taxation of Land Values and the Single Tax. By William Smart, LL.D. 125 pp., 8vo. Glasgow: MacLehose and Sons, 1900.

The first part of Professor Smart's little book is given to a popular exposition of the theory of taxation. The central point on which it turns is that taxation is a payment for service rendered, not a mere deduction from income, demanded by authority. This is, without question, a most important aspect of the matter, and one of which sight is too often lost. The assessment of taxes *juxta facultates* is interpreted by Dr. Smart to mean that the principle of equal sacrifice is followed.

In the second part of the volume the author seeks to judge the proposals to tax ground values by the criteria arrived at in the first part. He contends that the proposals are not truly a scheme of taxation—for a minority of supporters of such schemes are really anxious for them simply as a means to a more just apportionment of taxation—but a method of confiscation pure and simple. "The single tax, in short, is a proposal to kill three birds with one stone—to abolish private property in land, to lay violent hands on the revenues of one class without compensation, and to make taxation unnecessary by using these revenues." It is not necessary to add that Dr. Smart condemns the proposed assessment on ground values unsparingly.

The Effects of Recent Changes in Monetary Standards upon the Distribution of Wealth. By Francis S. Kinder, A.M. *Economic Studies.* Vol. IV, No. 6. 89 pp. 50 cents. New York: American Economic Association.

The writer of this monograph sets himself to disprove, or at any rate throw serious doubt upon, two conclusions which are fairly widely accepted. The first is that the fall in price following 1873 is quite accountable for by an unprecedented increase in the quantity of saleable goods produced. He shows that in the case of several important commodities, such as wheat, cotton, iron, &c., for which sufficiently reliable statistics can be obtained, the rate of increase of production after about 1870 to 1875 was less than during the preceding period of rising prices. Freights, too, fell faster in the earlier than in the later period. Hence, especially in view of the facts touching the monetary metals, he urges that the cause of the fall in prices must be sought on the side of changes affecting money rather than on that of changes affecting commodities generally.

His second contention is concerned with the general view that, in times of changing prices, wages alter more slowly than prices, and hence falling prices are better for wage-earners than rising prices. He adduces some theoretic considerations and then turns to statistical records. The annual rate of growth of real wages in several leading groups of employments is shown to have been, in the time of rising prices before 1873, equal to or greater than it was in the subsequent period of falling prices. He then shows that if earnings rather than wage-rates are considered, the case is strengthened, on account of more constant employment under rising prices. The case of the interest-receiver is also considered, and, taking into account the changes of purchasing power of interest and of the capital, the borrower is more heavily burdened by falling than by rising prices, the lender correspondingly advantaged.

The evidence here adduced as to the influence of changing price-levels certainly needs consideration, for it touches some points generally skimmed over rather lightly hitherto.

Colonial Immigration Laws. By E. E. Proper, A.M. 91 pp. 8vo. 75 cents. New York: The Columbia University Press.

A most interesting as well as instructive study of the way in which the different British colonies, now included in the United States, acted towards would-be immigrants is found in this little volume. The anxiety of the proprietary companies or individuals, in the earliest days of settlement, to secure settlers, led to the population taking on a cosmopolitan tinge from the very beginning. The colonists themselves were not everywhere anxious to welcome newcomers. So far as the restrictive measures of the New England colonies are concerned, the author regards it as probable that the rigour and harshness of Puritan legislation in these colonies, on other lines, were more effective barriers than the anti-immigration laws. He considers, too, that had the climate and soil been similar to that of the more southern settlements, the exclusive policy could not have been successful, and in that case the peculiar character of the early colonists would not have been preserved in later generations.

The statements, freely current recently in newspapers, as to the kinship between the Germans and the Americans, are borne out by the records which are referred to in this monograph. The marvellous power of absorption shown by the inhabitants of the region now known as part of the United States is very strikingly shown. Differences of language, modes of thought, religion, and the like, were not sources of division, as some pessimists feared. "A generation sufficed to obliterate to a great degree race prejudices and foreign languages."

On the social and religious life of the community, the newcomers who were foreigners exerted very important influences, but, in the view of the author, it was not so with regard to the forms of colonial political institutions. To these they contributed little or nothing.

As a help towards understanding how the American people came to be what they are, this study of the early legislation touching immigration is valuable. The later attitude of growing opposition to unrestricted immigration is, too, seen not to be by any means a strange fact, but the revival of a sentiment strongly felt even when the conditions of the country prevented it from dominating public policy.

History of Military Pension Legislation in the United States. By W. H. Glasson, Ph.D. 135 pp., 8vo. $1·00. New York: The Columbia University Press, 1900.

The pension question in the United States is regarded on this side as practically a question concerned with the Civil War. It is from that war that the main expense of military pensions has come, but the principles which were so costly in their application to the Civil War had been practically laid down long before. The tracing of the gradual evolution of the system is more important, if less striking, than the study of the abuses, outrageous as they were and are, which were especially connected with civil war pensions. Something like 500 millions sterling have been paid by the Treasury of the United States in support of the system of pensions, and the fact that close on 1 in 75 of the population is included in the pension register at this date is certainly remarkable.

The constant tendency to greater liberality in the enactments is abundantly illustrated in the history. The earliest laws were disability-provisions of restricted scope, but these were soon expanded in their range of application, and widows and orphans included. Then come service pensions, limited to those who were indigent. and finally, in 1832, a pure service pension to survivors of the revolutionary war. In the treatment of civil war cases the last stage has not yet been reached; but the Arrears Act, and the Act of 1890, granting disability pensions to survivors, whether the disability be connected with the military service or entirely independent of it in origin, have produced results scarcely preferable to those of a pure Service Pension Act. The author of the monograph regards it as likely that a renewal of treasury surpluses would provide occasion for enacting provisions granting service-pensions pure and simple.

The history of legislation in detail is carefully traced, and useful tables are given to illustrate the growth of the financial burden and of numbers of recipients. Administration is only incidentally dealt with, though not a little on this head is given. Were it examined thoroughly, the author tells us that a further monograph, of equal bulk with this, would be required for the purpose. His bibliography will be useful to any who are stimulated by reading his essay to desire a first-hand acquaintance with particular features of the history.

Future Dealings in Raw Produce. Report of a Committee of Section **F** of the British Association, presented at Bradford, 1900. 15 pp., 8vo., with 2 diagrams.

This report, after pointing out what are the special features which characterise dealings in "futures," and which facilitate gambling under the form of such dealings, proceeds to discuss, both from the standpoint of *à priori* considerations, and in the light of statistical results, the influence of such dealings on the level of prices and on their stability. By reference to the case of futures as "hedges" a favourite mare's nest of some opponents of the system is dealt with, the point involved being the reasons for the large proportion of futures sold to actual deliveries.

Reference is made to recent German experiences, as well as to the course of prices of wheat and cotton in England, and of the former in America, to support the conclusion that no depressing influence on prices received by producers can be traced to dealings in futures, while so far as stability is concerned, these transactions tend rather to promote greater stability than to cause increase of fluctuations. One of the diagrams is especially devoted to exhibiting the variations of each of two measures of stability of wheat-prices in England for a period of fifty years.

Quarterly Bulletin of the Bureau of Economic Research. No. 1. July, 1900. 34 pp. No. 2. Oct., 1900. 20 pp. 8vo. $1·00 per annum. New York.

This new publication is issued by an organisation formed for practical investigation in economics, statistics, and politics, which latter presumably means Political Science. The Bulletin will be concerned with index numbers, the department dealing with this subject being in charge of Professor John R. Commons. It is declared that the Bureau will undertake, on application, an inquiry upon any point or subject, within the range indicated above, which requires access to the greater libraries of the United States, or expert field work. It is, if we understand the issued statement aright, not proposed to include the results of such investigations in the Bulletin. Probably some other mode of publication is contemplated. The two numbers received deal with index numbers of general prices and of water and railroad freights, of bank clearings, &c. The basis is the decade 1879-89, the years being reckoned from 1st July to 30th June. Annual results are given, covering 1878 to 1900 in the first number; and monthly results in 1896 to 1900, with quarterly figures for 1878 to 1882, in the second.

A noteworthy point is the comparison, of a simple average of the 66 prices used, with a weighted average, showing the result, which previous comparisons of the same kind have shown, that the indications of price-movement are practically identical, *i.e.*, that the variations between the two measures are quite small. The tabular results are also shown in a number of diagrams. Comparison is made, too, with price-movements in Germany, Japan, India, and England, as also with those shown in the Aldrich report of 1893.

The introductory article by Professor Commons aims at explaining the nature and use of index numbers, but surely sacrifices accuracy to simplicity of exposition in confining the use of the term index number to those which are expressed as percentages. The *Economist* index number is quoted in the Bulletin in the form of a percentage, but, even in its original form, we can hardly refuse to call the aggregate figure published by that journal, starting as it does at 2200, an index number. There is nothing in the meaning of the term, or in its general use, limiting it to percentage expressions, though that form of expression is most convenient for general comparisons.

The work of the Bureau is not to be confined, as we have already stated, to compiling index numbers, and other sections of work are already organised. For its work on price-changes, of which alone we have as yet any specimens, we welcome its establishment. There is much interesting work on this subject for which the United States will provide material.

Saggio d' una Geografia Economica di Terra di Bari. Per Sabino Fiorese. 142 pp., folio. Trani, 1900.

This admirably designed sketch of the economic geography of the Bari district was prepared for the purposes of the Paris Exhibition. The higher School of Commerce of Bari shames many large English towns in attracting to its service men of such wide knowledge and breadth of view, as are manifested in the volume before us and in that referred to below. The limited area dealt with might have induced a narrow treatment. In fact, though dealing with a small area and a not very numerous population, the book gives abundant illustration of principles of wide application, while strictly adhering to its subject. The physical, anthropological, historical, demographical, political, commercial, financial, and social features of the district receive treatment, its agriculture and industry are described, and all with a marvellously small use of numerical tables. A map would have been a useful addition to the volume, especially in view of its preparation for use outside Italy. We specially note among the features dealt with, the remarkable recovery in exports in 1897 after a considerable period of stagnation. This, and the even more remarkable movements in banking, are dealt with at greater length in a separate volume.

Storia della Crisi Economica in Puglia dal 1887 *al* 1897. Narrata dal Dott. Sabino Fiorese. 168 pp., folio. Trani, 1900.

The way in which a part of Italy specially devoted to agricultural pursuits was affected by the financial crisis which wrought widespread ruin in the peninsula generally forms the subject of this volume, the second part of the work of which the preceding notice refers to the first. The influences at work in Apulia were peculiar, and merit special notice. The increase of viticulture, under the influence of an active export demand for France, forms the most prominent feature dealt with in the book. The transfer of land from arable to vineyard was aided by the extension of banking facilities, and in particular by the co-operative credit societies, the banks finding in agricultural development a profitable investment of the funds they could lend. The author associates the movement with a change of ideals; political independence, rather than peace and domestic independence, was aimed at; capital came to be desired as an instrument of social predominance, instead of as the means to domestic independence.

The way being prepared by over-speculation, the breakdown came with the denunciation of the French treaty of commerce. Apulia had exported, in 1887, about four times as great a value of wine to France as in 1882. This outlet was suddenly closed, and no other market could be found, with the result of a disastrous fall of price of the wine, and wholesale distress to the cultivators of the soil. The various phases of the crisis are discussed, and the efforts made to induce the Government to take ameliorative measures, set forth. The distress of Apulia is attributed to the strength of the interests of the northern manufacturers, who sought a protection which involved their southern countrymen in ruin.

The duration of the economic distress was long, but the author devotes a chapter at the close to the discussion of the renewed hopes which his province can at last indulge. May we venture to say that a gibe at mathematical economists is not needed to support the propriety of such a mode of study as his history of this crisis exemplifies. The human factor is by no means ignored by such economists, as the writer of this historical sketch seems to imagine.

A Short History of Commerce and Industry. By L. L. Price, M.A. 252 pp., crown 8vo., 3*s.* 6*d.* London: Edwin Arnold, 1900.

Mr. Price does not claim originality for his useful little summary of English Economic History, but there is some novelty in the spirit in which it is conceived, if not in the material used. To have economic history treated as "a department of 'economic science'" is sufficiently novel, for it affects the whole tone of the exposition. The volume opens with a chapter on "*Economic History: its Objects and its Difficulties;*" it closes with one on "*The Rise and Progress of Economic Science*," the latter briefly summarising part of the author's "History of Political Economy." In the intervening pages we have a freshly written and succinct account of the prominent features of the history of the industrial development and commercial evolution of our country during the period for which historical records afford material. As an introduction to a completer study, or, for theoretical students, as a means of grasping the main outlines of the history which is, perhaps, too often neglected, it should prove both useful and attractive. For the latter class of student especially may it prove valuable, since author and reader will be more in sympathy than in the case of the ordinary student of economic science seeking help from an historian, who ranks theory as of inferior importance, or at any rate places historical considerations before all others. The facts dealt with are the same, the spirit of exposition different.

Statistical and Economical Articles in Recent Periodicals.

UNITED KINGDOM—

Economic Journal. December, 1900—The Monetary Condition of India: * * *. Some Policies of the Cotton Spinners' Trade Unions: *S. J. Chapman.* An Investigation of the Cause of Trade Fluctuations: *J. B. C. Kershaw.* The Incidence of Urban Rates. III: *F. Y. Edgeworth.* The Canadian Preferential Tariff: *J. Davidson.* Municipal Telephones: *F. Brocklehurst.* Women in the Cigar Trade: *Grace Oakeshott.*

Economic Review. October, 1900—How far is Pauperism a Necessary Element in a Civilized Community?: *T. Mackay.* Elements of the Housing Problem: *Lettice Fisher.* Famines in India: *F. C. Channing.* Practicable Temperance Reforms: *Reformer.*

Manchester Statistical Society. Transactions, 1899-1900—Notes on City Government and Local Taxation in Copenhagen: *A. W. Flux.* Statistical Aspect of Wealth and Welfare: *C. S. Deras.* The Medical Charities of Manchester and Salford: *F. Brocklehurst.* Primary Education: *E. J. Broadfield.* Is Insanity Increasing?: *Dr. J. M. Rhodes.* Employers' Liability and Compensation to Workmen in Case of Accidents: *E. J. Carlisle.*

Statistical and Social Inquiry Society of Ireland. Journal, August, 1900—The Application of Co-operation in the Congested Districts: *G. W. Russell.* The Revaluation of Ireland: *N. J. Synnott.* The Sanitary Condition of Our National Schools: *A. Roche.* Economic Development in Ireland: *C. H. Oldham.* The New Local Bodies and the New Department of Agriculture and Technical Education and the Development of the Resources of Ireland: *C. Dawson.*

UNITED STATES—

Annals of the American Academy of Political and Social Science.—

September—Politics and Administration: *H. J. Ford.* The Law of the Value of Money: *C. A. Conant.* Natural Rights: *A. I. Clark.* The Ethical and Political principles of "Expansion": *T. Williams.*

November—Financial aspects of the Trust Problem: *E. S. Meade.* Law and practice of the United States in the acquisition and government of Dependent Territory: *C. Becker.* Drunkenness and the weather: *E. G. Dexter.* Cultural Factors in the Chinese Crisis: *P. S. Reinsch.*

American Economic Association, Publications. Vol. i, No. 3—Essays in Colonial Finance:—France: *E. R. A. Seligman.* Germany: *I. Loeb.* Netherlands: *C. Day.* Italy: *A. G. Keller.* Spain: *F. W. Blackmar.* Denmark: *C. W. Tooke.* British West Indies: *C. H. Hull.* Egypt: *E. W. Kemmerer.* British Possessions in South Africa: *R. P. Falkner.* English Colonies in Far East: *J. W. Jenks.*

UNITED STATES—*Contd.*

- *Columbia University, Studies in History, Economics, and Public Law.* No. 4—History of the Theory of Sovereignty since Rousseau: *C. E. Merriam.*
- *Journal of Political Economy. September*, 1900—The Income Tax and the National Revenues: *M. West.* The Foreign Trade of the United States from 1820 to 1840: *W. P. Sterns.* The Modern Condition of Agricultural Labor in Bohemia: *Katharine B. Davis.* Water Rights in the Arid West: *R. P. Teele.* The Unrevealed Profits of Promoters: *W. Z. Ripley.*
- *Political Science Quarterly. September*, 1900—The Constitution and New Territory: *J. W. Burgess.* Maritime Law in the Spanish War: *J. B. Moore.* Direct Taxes under the Constitution. II: *C. J. Bullock.* The Currency Act of March 14, 1900: *J. F. Johnson.* Women's Wages: *M. B. Hammond.*
- *Quarterly Journal of Economics. November*, 1900—Recent Discussion of the Capital Concept: *F. A. Fetter.* The Trusts: Facts established and Problems unsolved: *J. W. Jenks.* Enterprise and Profit: *F. B. Hawley.* The Capitalization of Public-Service Corporations: *W. Z. Ripley.*
- *Yale Review. November*, 1900—The alleged Failure of Democracy: *J. Bascom.* American International Indebtedness: *N. T. Bacon.* Observations concerning the Theory of Railway Charges: *H. T. Newcomb.* The Machinists' Strike, 1900: *E. L. Bogart.*

FRANCE—

- *Annales des Sciences Politiques*, 1900—
  - *September*—La représentation proportionnelle en Belgique et les élections générales de mai 1900. II: *E. Van der Smissen.* Tribunaux et magistrats militaires en Russie: *A. Scheikevitch.* La Conférence de La Haye. II: *C. Dupuis.*
  - *November*—L'État anglais et sa fonction à l'extérieur: *E. Boutmy.* La question des Nouvelles-Hébrides: *P. Lavagne.* L'Assurance obligatoire en Suisse et le Plébiscite du 20 mai 1900: *H. Micheli.* Les élections anglaises: *P. Hamelle.*
- *Journal de la Société de Statistique de Paris*, 1900—
  - *September*—La statistique au Congrès international des valeurs mobilières: *A. Neymarck.* L'Industrie domestique et rurale en Russie: *N. V. Ponomarev (concluded in next number).*
  - *October*—De l'infécondité de certaines populations industrielles: *A. Dumont (concluded in next number).*
  - *November*—La dette hypothécaire et les résultats des institutions de crédit foncier en France et à l'étranger: *E. Besson (concluded in next number).* Le rapport des naissances à la population donne-t-il la véritable impression de leur mouvement?: *C. Juglar.*
  - *December*—Note relative au mouvement de la population française en 1899: *L. March.* Les publications statistiques à l'Exposition universelle: *E. Levasseur.*

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Journal des Économistes, 1900—

October—La participation aux bénéfices: *G. de Nouvion.* Un jubilé de la Caisse nationale des retraites pour la vieillesse: *A. de Malarce.*

November—Le problème économique: *G. de Molinari.* L'agriculture à l'Exposition universelle: *L. Grandeau.* Les ouvertures de crédit dans la Banque moderne: *A. E. Sayous.*

December—Le problème du gouvernement individuel: *G. de Molinari.* Concert Méditerranéen: *Contre-Amiral Reveillère.* Les Banques primitives de l'Italie: *P. des Essars.* Une théorie de la population: *G. Cauderlier.* La question de l'union douanière Austro-Allemande en Autriche: *E. Castelot.*

La Réforme Sociale, 1900. *Nos.*—

111—Les Sociétés de secours mutuels et la question des assurances sociales en Angleterre au xviii^e^ siècle: *L. Bassereau.* Une Commune belge à cinquante ans d'intervalle; les industries à domicile: *A. Julin.*

112—L'État social au Chili: *C. Subercaseaux.* La crise des capitaux en Russie: *G. Afanassiev* (*concluded in next number*). De l'assurance complète en cas de décès, de vieillesse ou d'invalidité: *L. Fontaine.* L'amélioration du sort des ouvriers aux États-Unis: *L. Rivière.*

113—La réforme de la législation sur les syndicats professionnels: *H. Valleroux.* Des relations mutuelles des diverses branches de l'assurance ouvrière: *M. Bellom.*

114—Des relations mutuelles des diverses branches de l'assurance ouvrière. II: *M. Bellom.* Les établissements charitables d'après un récent rapport officiel: *H. Valleroux.* Le chomage: *H. Clément.*

115—Coopération et mutualité: *E. Cheysson.* La population française en 1800 et en 1900: *A. des Cilleuls.* Les revendications de la petite bourgeoisie: *G. Blondel.*

Revue d'Économie Politique. August-September, 1900—L'enseignement primaire, général et professionnel en France: *E. Villey.* Science et conscience allemandes: *M. Lair.* Une expérimentation coopérative en Suisse (La Société de production et de consommation de Birseck): *V. Totomiantz.* Évaluation de la fortune privée en France: *V. Turquan.*

GERMANY—

Archiv für Soziale Gesetzgebung und Statistik. Band 16. *Heft* 1 *und* 2—Die Reform der Deutschen Unfallversicherungsgesetzgebung: *E. Lange.* Der Kampf um Arbeit in der bürgerlichen Frauenwelt: *Lily Braun.* Gewerbe und Handel im deutschen Reich. Auf Grund der Gewerbezählung vom 14 Juni, 1895: *H. Rauchberg.* Ein neuer Beitrag zur Frage des Bauhandwerkerschutzes: *P. Voigt.* Die gegenwärtige Lage der englischen Landarbeiter: *E. Bernstein.* Ergebnisse der vierjährigen Thätigkeit der obligatorischen gegenseitigen Hagelversicherung in Bulgarien: *B. Minzès.*

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Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft. Heft 4, 1900—Über die Ausbildung einer richtigen Scheidemünzpolitik vom 14 bis 19 Jahrhundert: *G. Schmoller.* Die gewerbliche Entfaltung im Deutschen Reiche nach der Gewerbezählung vom 14 Juni, 1895. II.: *P. Kollmann.* Neuere Agrarpolitik in Algerien und Tunesien. I.: *G. K. Anton.* Die Unkündbarkeit der Hypotheken im Kanton Appenzell-Ausserrhoden: *A. Swaine.* Käufer und Verkäufer: *F. Oppenheimer.* Nachschrift der Redaktion: *G. Schmoller.* Die Winzergenossenschaften und die deutsche Gesetzgebung über Wein unter eingehender Schilderung der Verhältnisse von Preussischen Winzervereinen. I.: *F. Deichen.* Studien zur österreichischen Agrargeschichte und Agrarpolitik. III.: *K. Grünberg.* Glossen zu den bisherigen deutschen Volkszählungen: *E. Heitz.*

Jahrbücher für Nationalökonomie und Statistik, 1900—

September—Der städtische Anleihemarkt und seine Organisation in Deutschland: *J. Jastrow.* Die Bauern des 18 Jahrhunderts und ihre Herren im Lichte der neuesten deutschen Forschungen: *J. v. Jordan-Rozwadowski* (*concluded in next number*). Das Genossenschaftswesen im deutschen Molkereigewerbe: *K. Thiess.* Der russische Silberzoll.: *A. Markow.*

October—Die Allianzen, gemeinsame monopolistische Vereinigungen der Unternehmer und Arbeiter in England: *R. Liefmann.* Zur Lohnstatistik: *K. v. Mangoldt.* Die Handwerkerlöhne in Dänemark: *W. Finn.* Die Kleinmüllerei in Deutschland: *L. Koch.*

November—Die praktische Bedeutung der deutschen Volkszählung: *F. Zahn.* Die Kindersterblichkeit in Stadt und Land: *F. Prinzing.* Die Preisentwickelung im Hamburger Handel in den letzten Jahren: *J. Conrad.* Der Census von 1900 in den Vereinigten Staaten von Amerika: *F. Zahn.*

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Heft 3—Grundlagen der Handelsstatistik einiger fremder Staaten. II.: Schweiz. Statistik der deutschen Lebensversicherungs-Gesellschaften im Jahre 1899. Gewerbliche Kinderarbeit ausserhalb der Fabriken auf Grund der Erhebung, vom Jahre 1898. Krankenversicherung in den Knappschafts-Kassen und- Vereinen, 1898.

Heft 4—Konkurs-Statistik für 1899. Deutschen Zustizstatistik für 1899. Kriminalstatistik:—Verbrechen und Vergehen gegen Reichsgesetze 1894-1899. Bergwerke, Salinen und Hütten im Jahre 1899. Jugendlichen Fabrikarbeiter und die Fabrikarbeiterinnen im Jahre 1899. Hopfenanbau und Hopfenernte im Jahre 1900.

Zeitschrift für die gesamte Staatswissenschaft, Heft 4, 1900—Zur Verteidigung der Grenznutzenlehre: *K. Wicksell.* Die dem Handwerker und Kleinhändler durch das Hausiergewerbe bereitete Konkurenz: *E. Fridrichowicz.* Deutschlands gewerbliche Entwickelung seit dem Jahre 1882: *J. Feig.* Die

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Zeitschrift für die gesamte Staatswissenschaft, Heft 4—*Contd.*

Warenhäuser. Ihre Entstehung, Entwickelung und volkswirtschaftliche Bedeutung: *G. Stresemann.* Das mobile Kapital in Europa.

Zeitschrift für Socialwissenschaft, 1900—

September—Die chinesische Frage: *J. v. Bloch.* Die unehelichen Kinder in Berlin: *R. Kuczynski.* Eine brennende Frage der französischen Kolonialpolitik: *A. Zimmermann.*

October—Der Ursprung der Strafe; *E. Westermarck* (*concluded in next number*). Die Bevölkerungsfrage in Frankreich: *J. Goldstein.* Neuromantische Wirtschaftsgeschichte: *K. Lamprecht.* Französische Kolonialpolitik in Tunis: *K. Mareiner.*

November—Die chinesische Frage vom deutschen wirtschaftlichen Standpunkt aus: *M. v. Brandt.* Die Bevölkerung Europas zur Zeit der Renaissance: *J. Beloch.* Die wirtschaftliche, rechtliche und sittliche Auffassung vom Arbeitsverhältnis: *G. v. Mayr.*

AUSTRIA—

Statistische Monatschrift, 1900—

June—Ein System der objectiven Sociologie: *F. Hawelka* (*concluded in next number*). Statistik der Collegiengelder an den österreichischen Universitäten: *Graf St. H. Badeni.* Oesterreichs Sparcassen im Jahre 1898. II.: *H. Ehrenberger.*

July—Statistik der Börsenschiedsgerichte: *C. Roncali.* Das Stipendienwesen an österreichischen Hochschulen.

August—September—Die nächste Volkszählung: *K. T. v. Inama-Sternegg.* Die Zwangsversteigerungen von Leigenschaften im Jahre 1898: *J. Winckler.* Ueber die Reform der Budgetierung und Rechnungslegung für das Herzogthum Krain: *Dr. v. Cardona.*

ITALY—

Giornale degli Economisti, 1900—

October—La sopravalutazione della terra: *G. Valenti.* Sul governo degli esposti: *E. Raseri.* Lo sciopero di Molinella: *A. Bertolini.* Contro il dazio sul grano: *E. Giretti.*

November—Il diritto alla terra e il salario territoriale: *G. Valenti.* Una inchiesta sui Trusts negli Stati Uniti d'America: *R. Dalla-Volta.* La mora dei proprietari minimi al pagamento dell' imposta e le sue conseguenze per la pubblica finanza: *L. Nina.* I pretesi pericoli della abolizione del dazio sul grano: *E. Giretti.*

December—Le basi fondamentali di una scienza finanziaria pura: *G. Montemartini.* La missione speciale del *Veltro* dantesco: *A. Morena.* Ancora del decimo sciopero di Molinella: *G. E. Sturani.* Una storia dell' anarchismo e del comunismo: *V. Giuffrida.*

ITALY—*Contd.*

Rivista Italiana di Sociologia, 1900—

July-August—Un' applicazione di teorie sociologiche: *V. Pareto.* L' origine delle ordalie nel diritto siamese: *G. Mazzarella.* Nuove tendenze della beneficenza sociale: *A. Devito-Tommasi.*

September-October—La suggestione sociale: *L. Gumplowicz.* Il pensiero economico di Niccolo Machiavelli: *V. Tangorra.* L' evoluzione futura del sentimento religioso: *A. Baratono.* Di alcuni recenti studi sulla filosofia di Carlo Marx: *V. Giuffrida.*

SWITZERLAND—

Journal de Statistique Suisse. Band II, *Lief* 6—Finanzwesen und Bevölkerung der Stadt Bern im 15. Jahrhundert: *K. Schindler.* Les formulaires édictés pour le recensement fédéral du 1er décember 1900. Invaliditäts- und Altersversicherung der evang. Geistlichkeit in den evang. Kirchen der Schweiz: *H. Eugster.* Die Trunksucht in Basel: *H. O. Schlub.* Die Brotpreise in 20 Gemeinden des Kantons St. Gallen im Jahre 1898: *C. Zuppinger.*

VIII.—*Quarterly List of Additions to the Library.*

Additions to the Library during the Quarter ended 15*th December*, 1900, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India and Colonial Possessions;* (c) *United Kingdom and its Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

The Society has received, during the past quarter, the current numbers—either quarterly, monthly, or weekly—of the periodical official publications dealing with the following subjects:—

Consular Reports—From Austria-Hungary, United States, and United Kingdom.

Labour Reports, &c.—From Austria-Hungary, Belgium, France, United States, New York State, New Zealand, and United Kingdom.

Trade Returns—From Argentina, Austria-Hungary, Belgium, Bulgaria, China, Egypt, France, Germany, Greece, Italy, Mexico, Netherlands, Russia, Spain, Sweden, Switzerland, United States, India, Canada, and United Kingdom.

Vital Statistics—From Argentina, Egypt, Germany, Italy, Netherlands, Roumania, Switzerland, United States (Connecticut and Michigan), Queensland, South Australia, and United Kingdom.

Vital Statistics of following Towns—Buenos Ayres, Brünn, Prague, Brussels, Copenhagen, Berlin, Hanover, Florence, Bucharest, Madrid, London, Manchester, Dublin, Edinburgh, and Aberdeen.

The Society has received during the past quarter the current numbers of the following unofficial Periodicals and Publications of Societies, &c., arranged under the Countries in which they are issued:—

Denmark—Nationalökonomisk Tidsskrift.

Egypt—Bulletins et Mémoires de l'Institut Égyptien.

France—Annales des Sciences Politiques. Économiste Français. Journal des Économistes. Monde Économique. Polybiblion, Parties Littéraire et Technique. Réforme Sociale. Le Rentier. Revue d'Économie Politique. Revue de Statistique. Société de Statistique de Paris, Journal.

Germany—Allgemeines Statistisches Archiv. Archiv für Soziale Gesetzgebung und Statistik. Deutsche Oekonomist. Jahrbuch für Gesetzgebung, Verwaltung, und Volkswirtschaft. Jahrbücher für Nationalökonomie und Statistik. Zeitschrift für die gesamte Staatswissenschaft. Zeitschrift für Socialwissenschaft. Mittheilungen aus der Handelskammer Frankfurt a. M.

Italy—L'Economista. Giornale degli Economisti. Rivista Italiana di Sociologia.

Spain—Sociedad Geografica de Madrid, Boletin y Revista.

Sweden—Ekonomisk Tidskrift.

Switzerland—Journal de Statistique suisse.

United States—Banker's Magazine. Bradstreet's. Commercial and Financial Chronicle, with supplements. Engineering and Mining Journal. Journal of Political Economy. Political Science Quarterly. Quarterly Journal of Economics. Yale Review. American Academy of Political and Social Science, Annals and Bulletin. American Economic Association, Economic Studies and Publications. American Geographical Society, Bulletin. American Statistical Association, Quarterly Publications. American Philosophical Society, Proceedings and Transactions. Columbia University, Studies in History, &c. Sound Currency Committee, Leaflets.

India—Indian Engineering. Asiatic Society of Bengal, Journal and Proceedings

Canada—The Chronicle: Insurance and Finance.

New Zealand—Government Insurance Recorder. Trade Review and Price Current.

United Kingdom—The Accountant. Accountants' Magazine. Appointments Gazette. Athenæum. Australian Trading World. Bankers' Magazine. Bimetallist. British Trade Journal. Broomhall's Corn Trade News. Browne's Export List. Citizen. Colliery Guardian. Commercial World. Cotton. Economic Journal. Economic Review. Economist. Fireman. Incorporated Accountants' Journal. Insurance Record. Investors' Monthly Manual. Investors' Review. Iron and Coal Trades' Review. Labour Co-partnership. Licensing World. Machinery Market. Nature. Navy League, Journal. Policy-Holder. Post Magazine. Public Health. Publishers' Circular. Sanitary Record. Shipping World. Statist. The Times. Travel. Tuberculosis. Anthropological Institute, Journal. Cobden Club, Leaflets. East India Association, Journal. Imperial Institute, Journal. Institute of Actuaries, Journal. Institute of Bankers, Journal. Institution of Civil Engineers, Minutes of Proceedings. Iron and Steel Institute, Journal. Lloyd's Register of British and Foreign Shipping, Statistical Tables. London Chamber of Commerce, Journal. Manchester Literary and Philosophical Society, Memoirs and Proceedings. Royal Agricultural Society, Journal. Royal Asiatic Society, Journal. Royal Colonial Institute, Proceedings and Journal. Royal Geographical Society, Geographical Journal. Royal Irish Academy, Proceedings and Transactions. Royal Meteorological Society, Meteorological Record and Quarterly Journal. Royal Society, Proceedings. Royal United Service Institution, Journal. Sanitary Institute, Journal. Society of Arts, Journal. Statistical and Social Inquiry Society of Ireland, Journal. Surveyors' Institution, Professional Notes and Transactions. Trade Circulars.

Donations.	By whom Presented (when not purchased).
(a) **Foreign Countries.**	
Argentine Republic—	
Memoria del Departamento de Hacienda correspondiente al año 1899. 2 vols., 8vo. 1900	Mr. Harold Cox
Austria-Hungary—	
Ackerbau-Ministeriums. Statistisches Jahrbuch des k.k. (Current numbers)	The Ministry of Agriculture
Arbeitsstatistisches Amt. k.k. Protokoll der 6sten Sitzung des Arbeitsbeirathes, 1900. 8vo.	The Austrian Labour Department
Arbeiterschutz bei Vergebung öffentlicher Arbeiten und Lieferungen. Bericht des k.k. arbeitsstatistischen Amtes . . . La. 8vo. 1900	
Austria. Archiv für Gesetzgebung und Statistik. (Current numbers)	The Ministry of Commerce
Ergebnisse der Grundbesitzstatistik . . . nach dem Stande 31 Dec., 1896. Heft 2. Fol.	The Central Statistical Commission
Österreichisches Statistisches Handbuch für 1899. 8vo.	
Rechtspflege. Ergebnisse der Concursverfahrens . . . im Jahre 1896. Fol.	
Rechtspflege. Ergebnisse des Stafrechtspflege im Jahre 1896. Fol.	
Statistische Monatschrift. (Current numbers)	
Statistische Nachrichten aus dem Gesammtgebiete der Landwirtschaft. (Current numbers)	
Systematisches Verzeichniss der Gewerbe und anderer gewerbemässig ausgeübter Beschäftigungen für statistische Zwecke der Handels- und Gewerbekammern . . . 2^{e} Auflage. La. 8vo. 1900	The Ministry of Commerce
Hungary—	
Auswärtiger Handel der Länder der Ungarischen Krone im Jahre 1899. Fol.	The Royal Hungarian Statistical Bureau
Bewegung der Bevölkerung der Länder der Ungarischen Krone im Jahre 1897. Fol.	
Bohemia. Mittheilungen des Statistischen Landesamtes. Band ii, Heft. 2. La. 8vo. 1900	The Statistical Bureau
Bosnia and Hercegovina. Hauptergebnisse des auswärtigen Waarenverkehres im Jahre 1899. 35 pp. La. 8vo.	,,
Brünn. Vital and General Statistics of Brünn for 1888 to 1898. 6 parts. 8vo.	The Municipal Statistical Bureau
Belgium—	
Bulletin du Service de Santé et de l'Hygiène publique. Janvier—Juillet, 1900. 7 parts, 8vo.	The Belgian Government
Mines. Annales des. Tome v. Livr. 4. Année 1900	The Belgian Labour Department
Travail. Annuaire de la Législation du Travail. [International.] 3^{e} année, 1899. 8vo.	
Travail. Rapports annuels de l'Inspection du Travail. 5^{e} année (1899). Plates, 8vo.	
Travail. Les Industries à domicile en Belgique. Vol. 3. . . . Plates, &c., 8vo. 1900	
Brussels. Rapport concernant le Service de l'Hygiène. Année 1899. Diagrams, 8vo.	The Department of Health
Brazil—	
Boletim do Servico de Estatistica Commercial. 1° Semestre de 1900. No. 2, fol. 1900	The Statistical Bureau

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(b) **Foreign Countries**—*Contd.*	
Bulgaria—	
Mouvement de la Population dans la Principauté pendant 1898. 2ᵉ Partie, 4to.	The Statistical Bureau
Résultats des Ensemencements et la Récolte dans la principauté pendant l'année agricole 1897-98. Maps, 4to. 1900	
Statistique des Elections des Députés pour la 10ᵉ Assembléo nationale ordinaire (1899). Diagram-map, 4to. 1900	
Chile—	
Sinopsis Estadistica y Jeográfica de la Republica en 1899. 8vo. 1900	The Central Statistical Bureau
China—	
Customs Gazette. April—June, 1900	Sir Robert Hart, Bart., G.C.M.G.
Medical Reports for half-year ending 31st March, 1900. 59th issue. Plates, 4to.	
Returns of Trade and Trade Reports for 1899. Part 2, Reports and Statistics for each port, with report on Foreign Trade of China. Maps, &c., 4to.	
Denmark—	
Copenhagen—	
Köbenhavnsk Skolestatistik. 47 pp., 8vo. 1900	The Municipal Statistical Bureau
Stadslægens Aarsberetning for 1899. 4to. Map	
Egypt—	
Relevé des Maladies infectieuses de 1886-95. 20 pp., fol. [1900]	The Department of Health
Statistique sanitaire des villes d'Égypte, Résumé de la periode quinquennale de 1886-90. 3ᵉ Partie (fin). Mortalité des villes de la Basse-Égypte. Diagrams, fol. 1900	
Suez Canal. Returns of Shipping and Tonnage for 1897-99. [Cd-99.] 1900	Purchased
France—	
Agriculture. Bulletin du Ministère de l'. Année 1900. (Current numbers)	The Ministry of Agriculture
Chemins de fer de l'Europe. Situation au 31 Décembre, 1899. Ouvertures en 1899. 6 pp., 4to.	The Ministry of Public Works
Commerce et Navigation. Tableau général du, Année 1899. Vol. 1, Commerce de la France avec ses Colonies et les puissances étrangères. La. 4to.	The Director-General of Customs
Finances, Ministère des. Bulletin de Statistique et de Législation comparée. (Current monthly numbers)	The Ministry of Finance
Justice civile et commerciale en France et en Algérie. Compte général de l'Administration de la, pendant 1897. 4to.	The French Government
Justice criminelle en France et en Algérie. Compte général de l'Administration de la, pendant 1897.	
Monnaies et Médailles. Administration des, Rapport au Ministre des Finances. 5ᵉ année. 1900. Diagrams and plates, 8vo.	The Director of the Mint

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(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Mouvement de la Population. Statistique annuelle du, et des Institutions d'assistance. Tome 28, année 1898. 8vo.	The French Labour Department
Statistique Pénitentiaire pour 1898. Exposé général de la situation des services et des divers Établissements. 8vo. 1900	The Ministry of the Interior
Travail. Répartition des forces motrices à vapeur et hydrauliques en 1899. Tome 1, Moteurs à vapeur. 4to.	The French Labour Department
Travail. Statistique des grèves et des recours à la conciliation et à l'arbitrage survenus pendant 1899. 8vo.	
Algeria. A collection of Pamphlets relating to Algeria issued in connection with the Paris Exhibition. 8vo. 1900	The High Commissioner for Canada
Dictionnaire du Commerce, de l'Industrie, et de la Banque. Livr. 14. 8vo. 1900	Purchased
Germany—	
Auswärtiger Handel des deutschen Zollgebiets im Jahre 1899. Theil 1, Verkehr mit den einzelnen Ländern in 1899, 1898, und 1897. 4 Hefte. 4to.	The Imperial Statistical Bureau
Binnen-Schiffahrt im Jahre 1899	
Krankenversicherung. Statistik der, im Jahre 1898.	
Streiks und Aussperrungen im Jahre 1899. 4to.	
Vierteljahrshefte zur Statistik des Deutschen Reichs. Jahrgang 1900. Heft 3, also Heft 4, 1896. 4to.	
XIV Conferenz der Vorstände der Statistischen Aemter deutscher Städte. Protokoll über die am 7—11 Juni, 1900 im Rathhause zu Strassburg abgehaltene. 38 pp., fol. 1900	The Statistical Bureau of Strassburg
Prussia—	
Irrenanstalten im preussischen Staate während 1895-97. Fol.	The Royal Prussian Statistical Bureau
Sterblichkeit nach Todesursachen und Altersklassen der Gestorbenen . . . 1898. Fol.	
Berlin—	
Arbeiter-Kranken-Versicherung in Berlin im Jahre 1899. 4to.	The Municipal Statistical Bureau
Census, 1 Dec. 1900. Schedules, forms, &c., used in the. Sheets. 1900	
Frankfort. Jahresbericht ueber die Verwaltung des Medicinalwesens die Kranken-Anstalten und die oeffentlichen Gesundheitsverhaeltnisse der Stadt. Jahrgang 1899. 8vo.	"
Almanach de Gotha, 1901. Portraits	Purchased
Italy—	
Annuario Statistico Italiano. 1900. La. 8vo.	The Director-General of Statistics
Bollettino di Legislazione e Statistica doganale e commerciale. (Current numbers). 8vo.	
Giudiziaria, Statistica, civile e commerciale e Statistica notarile per 1896. Parte 2, Statistica notarile. 8vo.	

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(a) **Foreign Countries**—*Contd.*	
Italy—*Contd.*	
Movimento della Navigazione nel 1899. Parte 1—4. 2 vols. Diagrams, 4to.	The Director-General of Statistics
Japan—	
Report on the Post-Bellum Financial Administration in Japan, 1896-1900, by the Minister of State for Finance. xviii + 256 pp. 8vo. Tokio, 1900	The Japanese Consul, London
Mexico—	
Anuario Estadistico de la Republica, 1898. La. 8vo.	The Statistical Bureau
Boletin de Estadistica fiscal. (Current monthly numbers)	
Netherlands—	
Annuaire Statistique des Pays-Bas. (Colonies) 1898	The Central Statistical Bureau
Bijdragen tot de Statistiek. No. 1. Aperçu sur la Hollande (Histoire, Topographie. Population, Agriculture, Fabriques et Manufactures, Commerce, Contributions, Villes principales). xxxv + 568 pp., 4to. 1900	
Bijdragen tot de Statistiek. No. 2. Statistiek der Gemeentefinantiën in 1896. iv + 129 pp., 8vo. 1900	
Maandcijfers . . . betreffende Nederland en Nederlandsch Oost- Indië. No. 3. Jaar 1899 en Eerste maanden van 1900. 8vo.	
In-, Uit-, en Doorvoer over het Jaar 1899. Statistiek van den. Gedeelte 1 und 2. Fol.	The Department of Finance
Résultats provisoires du recensement de la population au 31 Déc., 1899. 35 + 13 pp., 8vo.	The Central Statistical Bureau
Verslag van de werkzaamheden der Centrale Commissie voor de Statistiek in 1899. 42 pp., 8vo.	
Norway—	
Commerce pendant 1899. Statistique du. (336)	The Central Statistical Bureau
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Justice criminelle pendant 1894-96. (339)	
Mines et usines en 1896-98. Statistique des. (340)	
Postale. Statistique, pour 1899. (338)	
Recrutement. Statistique du, pour 1899. (335)	
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Portugal—	
Annuario Estatistico das Contribuições directas, 1893-94. Maps. 1900	The Statistical Bureau
Censo da População do Reino de Portugal, 1 Dec., 1890. Vol. ii, and Part 1 of Vol. iii. 2 vols., 8vo.	
Instrucções para a execução do Recenseamento geral da População, 1 Dec., 1900. 8vo.	
Lisbon. Consumo em Lisboa. Estatistica dos generos sujeitos á pauta dos direitos de consumo. Annos 1890-99. 8vo.	
Colonies—	
Angola. Annuario Estatistico da Provincia de Angola, 1898. (Segunda anno.) Fol. 1900	

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(a) **Foreign Countries**—*Contd.*	
Portugal—*Contd.*	
Album de Estatistica graphica dos Caminhos de ferro portuguezes das provincias ultramarinas, 1898. Diagrams, fol.	The Ministry of Marine and Colonies
Russia—	
Agricultural Year-Book for 1899, Part 6. For 1900, Parts 1—3. Maps, 8vo. (In Russian)	The Department of Agriculture
Prices of rye and oats in European Russia. Diagram-maps showing. (Current monthly numbers)	The Department of Trade
Trade Returns for 1898. 4to. (In Russian)	The Department of Customs
Preliminary Trade Returns for 1899. 4to. (In Russian)	
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Handel och Sjöfart, 1899. 8vo.	The Central Statistical Bureau
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(Corrected to 31st December, 1900.)

ROYAL STATISTICAL SOCIETY.

(FOUNDED 1834. INCORPORATED 1887.)

9, ADELPHI TERRACE,
STRAND, W.C., LONDON.

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ROYAL STATISTICAL SOCIETY.

No. 9, Adelphi Terrace, Strand, W.C., London.

NOTICES TO FELLOWS.

December, 1900.

The Council desire to call the attention of the Fellows to the fact that notwithstanding the change in the name of the Society by the addition of the word "Royal," they are still, in using letters after their names, signifying the membership of the Society, only entitled under Rule 6, to use the letters F.S.S.

Annual Subscriptions are due in advance, on the 1st of January in each year. A Form for authorising a Banker or Agent to pay the Subscription Annually, will be forwarded by the Assistant Secretary, on application. When convenient, this mode of payment is recommended. Drafts should be made payable to the order of "The Royal Statistical Society," and crossed "*Drummond and Co.*"

To be included in the Ballot at any particular Ordinary Meeting, the Nomination Papers of Candidates for Fellowship must be lodged at the Office of the Society at least six days before the date of such Meeting.

Fellows who may desire to receive Special and Separate Notices of each Paper to be read before the Society at the Ordinary Meetings, should indicate their wishes to the Assistant Secretary.

The Ordinary Meetings of the Society during the Session 1900-01 will be held at 5 p.m., in most cases at **The Society's Rooms**, 9, Adelphi Terrace, W.C.

Fellows are entitled to a copy of the Catalogue of the Library and of the Index to the Catalogue. They may be had on personal application at the office, or will be forwarded upon the payment of carriage (9*d.* per parcel post). Fellows residing abroad or in the colonies are requested to send the necessary amount to cover postage, according to postal circumstances. (Weight, 3 lb. 14 oz. and 2 lb. 10 oz. respectively.)

The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. to 5 p.m., excepting on Saturdays, when they are closed at 2 p.m.

Fellows borrowing books from the Library are requested to be good enough to return them with as little delay as possible, but without fail at the expiration of a month, and without waiting for them to be recalled.

Fellows changing their Addresses are requested to notify the same to the Society, so that delay or error in forwarding communications, or the *Journal*, may be avoided.

By Order of the Executive Committee.

CALENDAR FOR THE SESSION 1900-01.

1900	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
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Particulars of the Papers to be read, and of the time and place of Meeting, will always be found in an advertisement on that page of the "Times" which faces the leading articles, on the Saturday preceding the holding of the Meeting. The advertisement also appears in other London Daily Papers at the same time, and to these announcements the attention of Fellows is particularly directed.

The latest arrangements as to Papers and Meetings up to the time of going to press will be found at page vii in each issue of the *Journal*.

THE ANNUAL GENERAL MEETING

WILL BE HELD ON TUESDAY, THE 18TH JUNE, 1901, AT THE SOCIETY'S ROOMS.

Programme of the Session 1900-1.

THE

ORDINARY MEETINGS

WILL BE HELD

IN THE MONTHS OF NOVEMBER TO JUNE,

IN MOST CASES

AT THE SOCIETY'S ROOMS,

9, Adelphi Terrace, Strand, W.C., London.

The Chair will be taken at 5 p.m. *on the following dates:—*

Tuesday, Nov. 20.	Tuesday, March 19.
,, Dec. 18.	,, April 23.
,, Jan. 15.	,, May 21.
,, Feb. 19.	,, June 18.

SEE NOTE ON THE OPPOSITE PAGE.

The following Papers have been read (Dec., 1900) :—

"On the Distribution of Population in England and Wales, and its Progress in the Period of Ninety Years from 1801 to 1891." By T. A. WELTON, F.C.A. (Read 20th November.)

"The State Monopoly of Spirits in Russia, and its Influence on the Prosperity of the Population." By ALEXIS RAFFALOVICH. (Read 18th December.)

The following Papers have been offered; and from these and from others that may yet be offered, a selection will be made by the Council:—

The President's Annual Address. By THE RIGHT HON. LORD AVEBURY, F.R.S.

"A Review of Indian Statistics." By F. C. DANVERS. (To be read in January.)

"Comparative Naval Power." By H. W. WILSON.

"The Shipping Trade of our Seaports, and changes therein during the past Twenty-five years." By ARTHUR LEE.

"The Organisation of Local Statistics." By JOHN MACDONELL, C.B., LL.D.

"The Recent Increase in the Gold Production of the World." By WYNNARD HOOPER, B.A.

"The suspension of the Berlin Produce Exchange, and its effect on Corn Prices." By REGINALD H. HOOKER, M.A.

"Statistics relating to Murder and Capital Punishment, being a continuation of Dr. Guy's Paper read in 1875." By CHARLES H. F. GORDON.

ROYAL STATISTICAL SOCIETY,

AN OUTLINE OF ITS OBJECTS.

THE *Royal Statistical Society* was founded, in pursuance of a recommendation of the British Association for the Advancement of Science, on the 15th of March, 1834; its objects being, the careful collection, arrangement, discussion and publication, of facts bearing on and illustrating the complex relations of modern society in its social, economical, and political aspects,—especially facts which can be stated numerically and arranged in tables;—and also, to form a Statistical Library as rapidly as its funds would permit.

The Society from its inception has steadily progressed. It now possesses a valuable Library of nearly 40,000 volumes, and a Reading Room. Monthly meetings are held from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation; the Papers read before the Society are, with an abstract of the discussions thereon, published in its *Journal*, which now consists of sixty-three annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal*, or issued separately.

To enable the Society to extend its sphere of useful activity, and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of Foreign works. Such a well-arranged Library for reference, as would result, does not at present exist in England, and is obviously a great *desideratum*.

The Society is cosmopolitan, and consists of Fellows and Honorary Fellows, forming together a body, at the present time, of about *one thousand* Members.

The Annual Subscription to the Society is *Two Guineas*, and at present there is no entrance fee. Fellows may, on joining the Society, or afterwards, compound for all future Annual Subscriptions by a payment of *Twenty Guineas.*

The Fellows of the Society receive gratuitously a copy of each part of the *Journal* as published Quarterly, and have the privilege of purchasing back numbers at a reduced rate. The Library (reference and circulating), and the Reading Room, are open daily, for the convenience of Members.

Nomination Forms and any further information will be furnished, on application to the *Royal Statistical Society*, 9, *Adelphi Terrace*, *Strand*, *W.C.*, *London.*

ROYAL STATISTICAL SOCIETY.

LIST OF THE SOCIETY'S PUBLICATIONS.

Note.—Sets—or Copies of any number—of the *Journal*, or of the other Publications of the Society (if not out of print), can be obtained of the publisher, E. Stanford, 26 and 27, Cockspur Street, Charing Cross, London, S.W., or through any bookseller.

	Price.
Proceedings— 308 pp. 1 vol. 8vo. 1834-37	(Out of print)
Transactions— Vol. 1, part 1. 148 pp. 4to. 1837	"
Journal (published quarterly)— Vols. 1—62. 8vo. 1838-99	5*s*. each part*
General Analytical Index to Vols. 1—50 of the Journal (1838-87). In 4 parts. 8vo.— (i) For the First Fifteen Volumes (1838-52) (ii) For the Ten Volumes (1853-62)................ (iii) For the Ten Volumes (1863-72)................ (iv) For the Fifteen Volumes (1873-87)	3*s*. 6*d*. each part
Subject-Index to the Journal. Vols. xxviii—lvii, 1865-94	1*s*. 6*d*.
First Report of a Committee on Beneficent Institutions. I. The Medical Charities of the Metropolis. 68 pp. 8vo. 1857........................	2*s*. 6*d*.
Catalogue of the Library— iv + 142 pp. 8vo. 1859...........................	(Out of print)
Statistics of the Farm School System of the Continent (reprinted from the *Journal*, with a Preface and Notes). 63 pp. 8vo. 1878	1*s*.
Catalogue of the Library— iv + 573 pp. Cloth, super royal 8vo. 1884	10*s*.
Index to the Catalogue of 1884— i + 372 pp. Cloth, super royal 8vo. 1886	10*s*.
Jubilee Volume— xv + 372 pp. Cloth, 8vo. 1885.......	10*s*. 6*d*.
List of Fellows, Rules and Bye-Laws, Regulations of the Library, and Outline of the Objects of the Society, &c. Corrected annually to 31st December. 8vo.	Issued gratuitously

Price of back Numbers of the Journal, &c., to Fellows only.

Fellows only, can obtain sets—or single copies of any number—of the *Journal*, or copies of the other Publications, at the Society's Rooms, 9, Adelphi Terrace, Strand, W.C.

By various resolutions of the Council, the prices charged to Members are as follows:—(a.) back numbers of the *Journal* of the Society, three-fifths of the publishing price; (b.) each part of the General Index to the *Journal*, 2*s*. 6*d*.; (c.) the Jubilee Volume, 5*s*.; (d.) the Subject Index, 1*s*.

NOTE.—One or two numbers of the *Journal* are now out of print.

* Before 1870 the price varied.

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ROYAL STATISTICAL SOCIETY.

Founded 15*th March*, 1834, *Incorporated* 31*st January*, 1887.

LIST OF THE FORMER

Patron and Presidents of the Society.

Patron.

	Period.
His Royal Highness The Prince Consort, K.G.	1840–61

Presidents.

The Most Noble the Marquis of Lansdowne, K.G., F.R.S.	1834–36 1842–43
Sir Charles Lemon, Bart., M.P., LL.D., F.R.S.	1836–38
The Rt. Hon. the Earl Fitzwilliam, F.R.S.	1838–40; 1847–49; 1853–55
The Right Hon. the Viscount Sandon, M.P. (afterwards Earl of Harrowby.)	1840–42
The Right Hon. the Viscount Ashley, M.P. (afterwards Earl of Shaftesbury.)	1843–45
The Right Hon. the Lord Monteagle	1845–47
The Right Hon. the Earl of Harrowby, K.G., D.C.L.	1849–51; 1855–57
The Right Hon. the Lord Overstone	1851–53
The Right Hon. the Lord Stanley, M.P. (afterwards Earl of Derby.)	1857–59
The Right Hon. the Lord John Russell, M.P., F.R.S. (afterwards Earl Russell.)	1859–61
The Right Hon. Sir J. S. Pakington, Bart., M.P., G.C.B. (afterwards Lord Hampton.)	1861–63
Colonel W. H. Sykes, M.P., D.C.L.	1863–65
The Right Hon. the Lord Houghton, D.C.L., F.R.S.	1865–67
The Right Hon. W. E. Gladstone, M.P., D.C.L.	1867–69
W. Newmarch, F.R.S., Corr. Mem. Inst. of France	1869–71
William Farr, M.D., C.B., D.C.L., F.R.S.	1871–73
William A. Guy, M.B., F.R.S.	1873–75
James Heywood, M.A., F.R.S., F.G.S.	1875–77
The Right Hon. George Shaw Lefevre, M.P.	1877–79
Thos. Brassey, M.P. (now the Rt. Hon. Lord Brassey, K.C.B.)	1879–80
The Right Hon. Sir James Caird, K.C.B., F.R.S.	1880–82
Sir Robert Giffen, K.C.B., LL.D., F.R.S.	1882–84
Sir Rawson W. Rawson, K.C.M.G., C.B.	1884–86
The Right Hon. Viscount Goschen, F.R.S.	1886–88
T. Graham Balfour, M.D., F.R.S.	1888–90
Frederic J. Mouat, M.D., LL.D., F.R.C.S.	1890–92
Charles Booth, D.Sc., F.R.S.	1892–94
The Right Hon. the Lord Farrer	1894–96
John Biddulph Martin, M.A., F.Z.S.	1896–97
Sir Alfred Edmund Bateman, K.C.M.G.	1897
The Right Hon. Leonard H. Courtney, M.A., M.P.	1897–99
The Right Hon. Sir Henry H. Fowler, G.C.S.I., M.P.	1899–1900

LIST OF FELLOWS.

Those marked *c* have Served or are Serving on the Council.
,, *d* have made Presentations to the Library.
,, *p* have contributed Papers to the Society.

*Those marked thus * have compounded for their Annual Subscriptions.*
The names of Present Members of Council are printed in SMALL CAPITALS.

Year of Election.		
1900	*d*	Abbott, Samuel W., M.D., 142, *State House, Boston, Mass., U.S.A.*
1900		Ablett, Cecil Gerard, *Standard Bank Chambers, Port Elizabeth.*
1888		Ackland, Thomas G., F.I.A., 10, *Church-crescent, Muswell-hill, Highgate, N.*
1888	*c d p*	Acland, The Right Hon. Arthur Herbert Dyke, M.A., *Westholme, Scarborough.*
1898		Acland, Sir C. Thomas Dyke, Bart., *Killerton, Exeter.*
1892	*c d*	ACWORTH, WILLIAM MITCHELL, M.A., 18, *St. James's-place, S.W.*
1891		Addington, Right Hon. Lord, 24, *Prince's-gate, S.W.*
1890		Adler, Marcus Nathan, M.A., F.I.A., 1, *Bartholomew-lane, E.C.; and* 22, *Craven-hill, W.*
1884		Agius, Edward Tancred, 3, *Belsize-grove, N.W.*
1879		Akers-Douglas, The Right Hon. Aretas, M.P., J.P., *Chilston-park, Maidstone, Kent.*
1876		Aldwinckle, Thomas Williams, 1, *Victoria-street, S.W.*
1898		Alexander, Alfred J., *Bristol Waterworks Company, Bristol.*
1896	*d*	Allan, Francis John, M.D., 5, *Tavistock-street, Strand, W.C.*

Year of Election.		
1889		Allen, Frank, J.P., 73, *Tinakire-road, Wellington, N.Z.*
1896		Allen, George Berney, *Cawnpore, N.W.P., India; and* 13, *Prince's-gardens, S.W.*
1876		Allen, John T. R., 15, *Norfolk-road, Brighton.*
1899	*d*	Allen, Richard James, *Cotton Assocn., Ltd., St. Mary's-gate, Manchester.*
1898		Allen, William Henry, *Bromham House, Bromham, near Bedford.*
1893		Anderson, Herbert William, *Halling, Kent.*
1889		Anderson, John Andrew (Alderman), *Faversham, Kent.*
1886		Andras, Henry Walsingham, F.I.A., *Provident Life Office*, 50, *Regent-street, W.*
1871		Angus, R. B., *Montreal, Canada.*
1890		Ann, Alfred E., F.R.G.S., *Tower Chambers, Finsbury Pavement, E.C.*
1897		Anning, Edward Herbert, F.R.G.S., 78, *Cheapside, E.C.*
1884		Anning, Edward James, 78, *Cheapside, E.C.*
1895		Arbuthnot, Gerald Archibald, *Hollingbourne Manor, Maidstone.*
1872		*Archibald, William Frederick A., M.A., 4, *Brick-court, Temple, E.C.*
1892		Argyle, Jesse, 67, *Mildmay-park, N.*
1897		Arnold, William, 11, *Albion-street, Hanley, Staffs.*
1888		Asch, William, 4, *Albert Mansions*, 118, *Victoria-street, S.W.*
1900		Aston, William Henry, *Eagle Wharf-road, N.*
1888	*d*	Atkinson, Charles, 61, *Margravine-gardens, West Kensington, W.*
1893	*d p*	Atkinson, Frederick J., *Deputy Accountant General, Calcutta, India.*
1892		*Atkinson, Robert Hope, *New York Life Insurance Co., Place d'Armes, Montreal.*
1865	*c p*	AVEBURY, RIGHT HON. LORD, F.R.S. (*President*), *High Elms, Farnbro', R.S.O., Kent.*
1893		Aves, Ernest, M.A., 18, *Primrose-hill-road, N.W.*

Year of Election.		
1872	*c d*	*Babbage, Major-General Henry Prevost, *Mayfield, Lansdown, Cheltenham.*
1872		*Backhouse, Edmund, *Trebah, Falmouth.*
1892		Bacon, George Washington, F.R.G.S., 127, *Strand, W.C.*
1855	*c d*	BAILEY, ARTHUR HUTCHESON, F.I.A., 26, *Mount Ephraim-road, Streatham, S.W.*
1900		Baily, James Thomas Herbert, 56, *Charing Cross, S.W.*
1890		Bain, William Whyte (*General Assurance Co.*), 141, *West George-street, Glasgow.*
1881	*c d p*	BAINES, JERVOISE ATHELSTANE, C.S.I., (*Hon Secretary*), 23, *Kensington Park-gardens, W.*
1887		Baldwin, Alfred, M.P., J.P., *Kensington Palace Mansions, S.W.*
1878		Balfour, The Right Hon. Arthur J., M.P., F.R.S., 10, *Downing-street, S.W.*
1886		Balfour, The Right Hon. Gerald William, M.P., 3, *Whitehall Court, S.W.*
1881		*Barfoot-Saunt, William Henry, *Market Harborough, Leicestershire.*
1884		Barlow, William Henry, F.R.S., C.E., *High Combe, Old Charlton, Kent.*
1899		*Barnardo, Thomas John, F.R.C.S., Edin., *St. Leonard's Lodge, Surbiton.*
1887		Barnes, Joseph Howard, F.I.A., 70, *Lombard-street, E.C.*
1885		Barratt, Thomas J., 75, *New Oxford-street, W.*
1887		*Barrett, Thomas Squire, F.Z.S., M.A.I., &c., *Rose Cottage, Millfield-road, Widnes.*
1878		Barry, Sir Francis Tress, Bart., M.P., *St. Leonard's-hill, Windsor.*
1888		*Bartlett, Frederick W., 17, *Melford-road, Dulwich Common, S.E.*
1889	*d*	Bastable, Professor C. F., M.A., LL.D., 6, *Trevelyan-trr., Brighton-rd, Rathgar, Co. Dublin.*
1873		Bate, George,

Year of Election.		
1877	*c d p*	BATEMAN, SIR ALFRED EDMUND, K.C.M.G. (*Honorary Vice-President*). *Board of Trade, Whitehall-gardens, S.W.*
1888		Batten, John W., Q.C., 3, *Harcourt-buildings, Temple, E.C.*
1877		Bayfield, Arthur, 95, *Colmore-row, Birmingham.*
1873		*Baynes, Alfred Henry, F.R.G.S., 19, *Furnival-street, Holborn, E.C.*
1871		*Baynes, William Wilberforce, F.I.A., *Pickhurst Wood, Bromley, Kent.*
1900		Beamish, Henry Hamilton, *Hope Estates, Hewaheta, Ceylon.*
1875	*d*	*Beardsall, Francis E. M., 63, *Brown-street, Manchester.*
1875	*d*	*Beaufort, William Morris, F.R.A.S., F.R.G.S., 18, *Piccadilly, W.*
1882	*d*	*Beazeley, Michael Wornum, M.A., *Worting, Basingstoke.*
1884		Bedford, James, *Woodhouse Cliff, Leeds.*
1882	*c d*	*Beeton, Henry Ramie (6*a*, *Austin Friars, E.C.*), 9, *Maresfield-gardens, Hampstead, N.W.*
1899	*d*	Beeton, Mayson M., B.A., *Horsey Hall, Norfolk.*
1886	*d*	Begg, Ferdinand Faithfull, *Bartholomew House, E.C.*
1890		Bell, Frederick, F.I.A., *Imperial Life Office*, 1, *Old Broad-street, E.C.*
1892	*d*	Bell, Frederick William, *P.O. Box* 250, *Cape Town, S. Africa.*
1884	*d*	Bell, James T., *Northcote, Dowanhill, viâ Glasgow.*
1878	*d p*	Bence-Jones, Henry R., B.A., *Board of Trade, Whitehall-gardens, S.W.*
1897		Bennett, William, *City Mutual Life Ass. Soc., Melbourne.*
1888		*Benson, Godfrey R., 23, *The Grove, Boltons, S.W.*
1895		Bentinck, Lord Henry, M.P., 13, *Grosvenor-place, S.W.*
1884		*Bentley, Richard, F.R.G.S., *Upton, Slough, Bucks.*
1884	*d*	Berg, Wilhelm, 21, *Mincing-lane, E.C.*
1890		Berry, Arthur, M.A., *King's College, Cambridge.*
1891		Berry, Oscar, C.C., F.C.A., *Monument House, Monument-square, E.C.*

Year of Election.		
1900		Bethell, Alfred James, *Middlesthorpe Lodge, Dringhouses, York.*
1875		Bevan, Thomas, *Stone-park, near Dartford, Kent.*
1869	p	*Beverley, The Hon. Mr. Justice Henry, *Nascot Lodge, Watford.*
1891	d	Biddle, Daniel, M.R.C.S., L.S.A., *Charlton Lodge, Kingston-on-Thames*
1897		Biggs, John Thomas, J.P., *Woodlands, Aylestone, Leicester.*
1888		Billinghurst, Henry F., 35, *Granville-park, Blackheath, S.E.*
1899	c	Birchenough, Henry, M.A., *Macclesfield.*
1881		Bishop, George, 113, *Powis-street, Woolwich.*
1898		Blount, Edward Thomas Joseph, F.F.A., A.I.A., *Standard Insurance Co., Shanghai, China.*
1898		*Blyth, Sir James, Bart., *Stansted, Essex.*
1884	d	Boileau, John Peter H., M.D., &c. (*Brigade-Surgeon Lieut.-Col.*). *Trowbridge, Wilts.*
1881		Bolitho, Thomas Robins, *Trengwainton, Hea Moor, R.S.O., Cornwall.*
1887		Bolling, Francis, 2, *Laurence Pountney-hill, E.C.*
1890		Bolton, Edward, J.P., *Clifton House, Beverley-road, Hull.*
1880		Bolton, Joseph Cheney, *Carbrook, Larbert, Stirlingshire.*
1885	c d	*Bonar, James, M.A., LL.D., *Civil Service Commission, Westminster, S.W.*
1887		Bond, Edward, M.P., *Elm Bank, Hampstead, N.W.*
1898		Bone, Albert Ebenezer, *Knutsford House, Larkhall-lane, Clapham, S.W.*
1885	c d p	Booth, Charles, D.Sc., F.R.S. (*Hon. Vice-President*), 9, *Adelphi-terrace, W.C.*
1888		Bottomley, George, *Arbourfield House, Derby.*
1900		Bottomley, Harry, *Borough Treasurer, Guildhall, Plymouth.*
1899		Bourne, Arthur (*Equitable Life Office*), 120, *Broadway, New York, U.S.A.*
1876	c	Bowen, Horace George, *Bank of England, E.C.*
1894	c d p	Bowley, Arthur Lyon, M.A., *Waldeck House, Southern-hill, Reading.*

Year of Election.		
1879		Bowley, Edwin. 29, *Croftdown-road, Highgate, N.W.*
1886	*c d*	Boyle, Sir Courtenay, K.C B. *Board of Trade, Whitehall-gardens, S.W.*
1894	*c d p*	Brabrook, Edward William, C.B., F.S.A., 28, *Abingdon-street, S.W.*
1883		Braby, Frederick, F.C.S., F.G.S., *Bushey Lodge, Teddington.*
1875		Braby, James, J.P., 28, *First Avenue, Hove, Sussex.*
1888	*d*	Bramwell, Sir Frederick J., Bart., D.C.L., F.R.S., 5, *Great George-street, Westminster, S.W.*
1900		Branford, Victor Verasis, M.A., 5, *Old Queen-street, Westminster, S.W.*
1873	*c d p*	Brassey, The Right Hon. Lord, K.C.B. (*Honorary Vice-President*), 4, *Great George-street, S.W.; and* 24, *Park-lane, W.*
1864		*Braye, The Right Hon. Lord, *Stanford Hall, Market Harbro'; and* 7, *Buckingham-gate, S.W.*
1883		Brooke, C. B., 16, *Leadenhall-street, E.C.*
1874		Broom, Andrew, A.C.A., *Eaglehurst, Staines, Middlesex.*
1895	*d*	Broomhall, George James Short, 17, *Goree Piazzas, Liverpool.*
1878		Brown, Alexander Hargreaves, M.P., 12, *Grosvenor-gardens, S.W.*
1896		*Brown, Daniel Maclaren, junr., *P.O. Box* 187, *Corra Linn, Port Elizabeth.*
1893		Brown, James William Bray, F.S.A.A., *Corporation-street, Birmingham; and Moseley, Worcestershire.*
1890		Browne, Edward William, 33, *Poultry, E.C.*
1875	*p*	Browne, Thomas Gillespie C., F.I.A., 11, *Lombard-street, E.C.*
1900		Bullock, Charles J., Ph.D., *Williams College, Williamstown, Mass., U.S.A.*
1886		*Brunner, Sir John Tomlinson, Bart., M.P., *Druid's Cross, Wavertree, Liverpool.*
1880	*c d p*	*Burdett, Sir Henry Charles, K.C.B., *The Lodge, Porchester-square, W.*
1873		*Burdett-Coutts, The Right Hon. the Baroness, 1, *Stratton-street, W.; and Holly Lodge, Highgate, N.*
1884		Burdett-Coutts, William, M.P., 1, *Stratton-street, Piccadilly, W.*

Year of Election.

1897 Burke, David, A.I.A., F.I. Inst.,
Royal Victoria Life Ins. Co., Montreal, Canada.

1895 Burrup, John Arthur Evans,
The Custom House, Calcutta, India.

1880 Burt, Frederick, F.R.G.S.,
Uplands, Stoke Poges, near Slough, Bucks.

1872 *Burton, The Right Hon. Lord,
Chesterfield House, Mayfair, W.; and Rangemore, Burton-on-Trent.

1898 Burton, William Roland,
c/o Colonial Mutual Life Ass. Soc., Cape Town.

1886 Bush, Baron William de, F.C.S.,
Preshaw House, near Bishop's Waltham, Hants.

1893 d *Bushill, Thomas William,
Longfield, Bubbenhall, viâ Kenilworth.

1892 Byworth, Charles Joseph, J.P., F.S.A.A. (*Town Clerk*),
Town House, Cape Town, South Africa.

1897 Cairnes, Frederick Evelyn,
Killester House, Raheny, Co. Dublin.

1896 Campbell, Charles William,
H.B.M. Consulate General, Shanghai, China.

1879 Campbell-Colquhoun, Rev. John Erskine,
Chartwell, Westerham, Kent.

1889 p Cannan, Edwin, M.A.,
1, *Wellington-square, Oxford.*

1891 d Cannon, Henry W. (*Chase National Bank*),
15, *Nassau-street, New York, U.S.A.*

1900 d Canovai, Commendatore Tito,
Bank of Italy, Rome.

1881 Carden, Lionel Edward Gresley,
H.M. Consul, Mexico.

1872 *Carillon, J. Wilson, F.S.A., F.R.G.S.,
The Chimes, Richmond, Surrey.

1893 *Carpenter, Henry Saunders,
Beckington House, Weighton-road, Anerley, S.E.

1888 Carr, Ebenezer,
24, *Coleman-street, Bank, E.C.*

1893 Carr, William Robert Taylor,
Monument House, Monument-square, E.C.

1900 Carter, Adolphus Hugh,
32, *Crayford-road, Tufnell-park, N.*

Year of Election.		
1890		*Carter, Eric Mackay, A.I.A., F.C.A., 33, *Waterloo-street, Birmingham.*
1883	d	*Carter, Joseph Robert, *Rosslyn, Rectory-road, Rickmansworth, Herts.*
1878		*Casley, Reginald Kennedy, M.D., *Ipswich.*
1881		Causton, Richard Knight, M.P., 12, *Devonshire-place, Portland-place, W.*
1884	d	*Chailley-Bert, Joseph, 44, *Chaussée d'Antin. Paris.*
1880		*Chamberlain, The Right. Hon. Joseph, M.P., F.R.S., 40, *Prince's-gardens, S.W.*
1898		Chapman, Edward Stuart, 6*a*, *South-side, Clapham-common, S.W.*
1886	d	*Chapman, Samuel, F.I.Inst., 227—228, *Gresham House, Old Broad-st., E.C.*
1892		*Chatham, James, F.I.A., F.F.A., *Inverleith Park House, Edinburgh.*
1851		*Cheshire, Edward, 3, *Vanbrugh-park. Blackheath, S.E.*
1886	d p	*Chisholm, George Goudie, M.A., B.Sc., F.R.G.S., 59, *Drakefield-road, Upper Tooting.*
1900		Clark, John S., 110, *Boylston-street, Boston, Mass., U.S.A.*
1888		Clarke, C. Goddard, J.P., *Fairlawn*, 157, *Peckham Rye, S.E.*
1882	d	*Clarke, Sir Ernest, M.A., F.L.S., F.S.A., 13*a*, *Hanover-square, W.*
1877		*Clarke, Henry, L.R.C.P., *H.M. Prison, Wakefield, Yorks.*
1890		Clarke, Henry, J.P., *Cannon Hall, Hampstead, N.W.*
1899		Claughton, Gilbert H., *The Priory, Dudley.*
1899		Clay, Walter Gorst, M.A., 5, *Paper-buildings, Temple. E.C.*
1869	c	Cleghorn, John, 3, *Spring-gardens, S.W.*
1853		Clirehugh, William Palin, F.I.A., 66, *Cornhill, E.C.*
1889		Coate, James, *Lea Coombe House, Axminster.*
1884		Cockshott, John James, 24, *Queen's-road, Southport.*
1887	c	**Cohen, Nathaniel Louis**, 11, *Hyde Park-terrace, W.*
1859		Coles, John, F.I.A., 39, *Throgmorton-street, E.C.*
1892	p	*Collet, Miss Clara Elizabeth. M.A., *Kirkdale, Woodside, Wimbledon.*

Year of Election.		
1887		Collet, Sir Mark Wilks, Bart., 2, *Sussex-square, W.; and St. Clere, Sevenoaks.*
1895		Collins, Howard James, *The General Hospital, Birmingham.*
1882		*Collum. Rev. Hugh Robert, M.R.I.A., F.R.C.I., *Leigh Vicarage, near Tonbridge, Kent.*
1891	*d*	Cooper, Joseph, 60, *Park-street, Farnworth, near Bolton.*
1874		Corbett, John, *Impney, Droitwich.*
1883		Corgialegno, M., *George-yard, Lombard-street, E.C.*
1873		Cork, Nathaniel, F.R.G.S., 18, *Birchin-lane, E.C.*
1889		Cornwallis, Fiennes Stanley Wykeham, *Linton-park, Maidstone, Kent.*
1895		Costello, James Edward, 3, *Throgmorton-avenue, E.C.*
1880	*d*	Cotterell-Tupp, Alfred, 17, *Devonshire-terrace, Hyde-park, W.*
1899		Court, Stephen E., 17, *Pall Mall East, S.W.*
1862	*c d p*	COURTNEY, THE RIGHT HON. LEONARD HENRY, M.A. (*Honorary Vice-President*), 15, *Cheyne Walk, Chelsea, S.W.*
1896	*d*	Cox, Harold, 6, *Raymond-buildings, Gray's Inn, W.C.*
1888		Craggs, John George, F.C.A. (*Craggs, Turketine & Co.*), 52, *Coleman-street, E.C.*
1874	*c d p*	CRAIGIE, MAJOR PATRICK GEORGE (*Vice-President and Hon. Foreign Secretary*), 6, *Lyndhurst-road, Hampstead; and* 4, *Whitehall-place, S.W.*
1899	*d*	Craik, Sir Henry, K.C.B., LL.D., *Scotch Education Depart., Whitehall, S.W.; and Moor Cottage, Great Berkhamsted, Herts.*
1890	*c d p*	CRAWFORD, RICHARD FREDERICK, 4, *Whitehall-place, S.W.*
1891		*Crawley, Charles Edward (*Controller General*), *Hyderabad, Deccan, India.*
1894		Crease, Major-General John Frederick, C.B., *United Service Club, Pall Mall, S.W.*
1878		Crewdson, Ernest, *Castle Meadows, Kendal.*
1892		Cripps, Charles Alfred, Q.C., 1, *Essex-court, Temple, E.C.*
1890		Croal, David Octavius, 11, *Abchurch-lane, E.C.*
1900		Crowley, George, *City Mutual Life Ass. Soc., Ltd., Sydney, N.S.W.*

Year of Election		
1900		Crowley, Michael, F.C.A., F.S.A.A., 16, *College Green, Dublin.*
1883	*c d*	Cunningham, Rev. William, M.A., D.D., 2, *St. Paul's-road, Cambridge.*
1879	*d*	Curtis, Robert Leabon, F.S.I., J.P., 120, *London Wall, E.C.*
1873		Czarnikow, Cæsar, 29, *Mincing-lane, E.C.*

1900		Da Costa, José Simao (*Garantia da Amazonia*), *Belem do Para, Brazil.*
1900		Dale, Charles Ernest, F.S.A.A., *Old Calabar, West Africa.*
1886		Dale, Sir David, Bart., *West Lodge, Darlington.*
1888		Dangerfield, Athelstan, A.C.A., 56, *Cannon-street, E.C.*
1898	*d*	*Danson, Francis Chatillon, *Liverpool and London Chambers, Liverpool.*
1880	*c d p*	**DANVERS, FREDERICK CHARLES,** *The Park, Addlestone, Surrey.*
1873	*c d p*	Danvers, Sir Juland, K.C.S.I., 103, *Lexham-gardens, Kensington, W.*
1897	*d p*	*Darwin, Major Leonard, R.E., F.R.G.S., 12, *Egerton-place, S.W.*
1892		Dash, William Lawson, J.P., 301, *Pitt-street, Sydney, N.S.W.*
1893		Davidson, Captain J. H. D., *Box* 1463, *G.P.O., Sydney, N.S.W.*
1869		Davies, James Mair, 168, *St. Vincent-street, Glasgow.*
1896		Davies, Theodore Llewelyn, *The Treasury, Whitehall, S.W.*
1899		D'Avigdor-Goldsmid, Osmond Elim, *Somerhill, Tonbridge, Kent.*
1888		Dawson, G. J. Crosbie, M. Inst. C.E., F.G.S., *North Staffordshire Railway, Stoke-upon-Trent.*
1899		Dawson, Miles Menander, 11, *Broadway, New York, U.S.A.*
1899	*d*	Dawson, Sidney Stanley, A.C.A., 35, *Dale-street, Liverpool.*

Year of Election.		
1897	*d*	Deane, Albert Bickerton, 35, *Great George-street, Westminster, S.W.*
1880		Debenham, Frank, 1, *Fitzjohn's-avenue, Hampstead, N.W.*
1885	*d*	De Broë, Emile Conrad De Bichin, 41, *Belsize-avenue, N.W.*
1879		*De Ferrieres, The Baron Du Bois, J.P., *Bay's Hill House, Cheltenham.*
1898		Defries, Wolf, B.A., *Arden, Portmore-park, Weybridge.*
1900		De la Plaza, Victorino, LL.D., *The Buenos Ayres and Pacific Railway Co.,* 9, *New Broad-street, E.C.*
1891		Denne, William, *Phillimore, Wetherill-road, New Southgate, N.*
1898	*d*	Denny, John Thavies, 42, *Devonport-road, Shepherd's Bush, W.*
1873		Dent, Edward, 2, *Carlos-place, Grosvenor-square, W.*
1887		Dent, George Middlewood, 13, *Chambres-road, Southport.*
1889		De Rothschild, Leopold, J.P., D.L. (Alderman), 5, *Hamilton-place, Piccadilly, W.*
1892		De Smidt, Henry (*Permanent Under-Secretary*), *Cape Town, Cape Colony.*
1898		Dever-Summers, Frank, 39, *Hervey-road, Blackheath, S.E.: and National Liberal Club, S.W.*
1892		Dewar, William Nimmo (*Standard Life Assurance Co.*), 28, *Elizabeth-street, Sydney, N.S.W.*
1900		Dewsnup, Ernest Ritson, M.A., *Technical College, Huddersfield.*
1890		Dickinson, Willoughby Hyett, 51, *Campden-hill-road, W.*
1866	*c d p*	*Dilke, The Right Hon. Sir Charles Wentworth, Bart., M.P., LL.M., 76, *Sloane-street, S.W.*
1897		Dobson, Goland Burton, 58, *Lincoln's Inn Fields, W.C.*
1889		Double, Alfred, C.C., 92 *and* 93, *Fore-street, E.C.*
1889		Doubleday, William Bennett, 123, *Tulse-hill, S.W.*
1899		Dougharty, Harold, A.I.A., *London and Lancs. Life Office,* 66 *and* 67, *Cornhill, E.C.*
1889	*d*	Douglas, J., *E.I. Railway House, Dalhousie Square, Calcutta.*
1878	*d*	Doyle, Patrick, C.E., F.G.S., M.R.A.S., *Calcutta.*

Year of. Election		
1894	c d p	DRAGE, GEOFFREY, M.A., 15, *Wilton-place, S.W.*
1890		Drummond, Charles James, 21, *Dalmore-road, West Dulwich, S.E.*
1897	d	Dudfield, Reginald, M.A., M.B., 19, *Blomfield-road, Maida Vale, W.*
1895	c	Dudley, The Right Hon. the Earl of, 7, *Carlton Gardens, S.W.*
1875	d p	Dun, John, *Parr's Bank, Bartholomew-lane, E.C.*
1878	c	*Dunraven, The Right Hon. the Earl of, K.P., *Kenry House, Putney Vale, S.W.*
1885		Dyer, William John, 17, *Montpelier-row, Blackheath, S.E.*
1888		Earnshaw, Jacob, *Prudential Assnce. Bldgs.*, 78, *King-st. Manchester.*
1888	d	Eckersley, J. C., M.A., F.R.G.S., *Ashfield, Wigan.*
1883	c d p	EDGEWORTH, PROFESSOR FRANCIS YSIDRO, M.A., D.C.L., 5, *Mount Vernon, N.W.; and All Souls', Oxford.*
1896		Edwards, Charles Lewis, 748, *Avenida de Mayo, Buenos Aires.*
1880		Egerton of Tatton, The Right Hon. Earl, 7, *St. James's-square, S.W.*
1885	c d p	Elliott, Thomas Henry, C.B., *Board of Agriculture*, 4, *Whitehall-place, S.W.*
1885		Elliott, William, *P.O. Box* 42, *Lower St. George's-st., Cape Town.*
1895		Elliott, William, junr., *P.O. Box* 1583, *Johannesburg, South Africa.*
1895		Elwell, William Henry, 38, *Parliament-street, S.W.*
1889		Erhardt, William, 7, *Bury-street, Bloomsbury, W.C.*
1896		Everett, Percy Winn, *Elstree, Herts.*

Year of Election.		
1892		Faber, Harald, *Fiona, Lennard-road, Penge, S.E.*
1875		Faraday, Frederick J., 17, *Brazennose-street, Manchester.*
1888		Farlow, A. R. King, 4, *King-street, Cheapside, E.C.*
1889	d	Farnworth, Edward James, 26, *Winckley-square, Preston.*
1878		Farren, George, J.P., M.Inst.C.E., *Carnarvon.*
1900		Farrer, The Right Hon. Lord, *Abinger Hall, Dorking.*
1890		Faulks, Joseph Ernest, B.A., F.I.A., 187, *Fleet-street, E.C.*
1893		*Fawcett, Mrs. Millicent Garrett, 2, *Gower-street, W.C.*
1882		Fell, Arthur, M.A., 46, *Queen Victoria-street, E.C.*
1894		Fellows, Rowland Hill, F.I.A., 32, *Honiton-road, Kilburn, N.W.*
1893		Fenwick, John Fenwick, *Spencer House, Wimbledon-common.*
1894		Field, John William (*Gas Light and Coke Company*), *Horseferry-road, Westminster, S.W.*
1899		Finch, Henry Hobson, 29, *Kensington Gardens-square, S.W.*
1889		*Finlay, Major Alexander, *The Manor House, Little Brickhill, Bletchley, Bucks.*
1884	d	*Finnemore, The Hon. Mr. Justice R. I., F.R.G.S., *Supreme Court, Pietermaritzburg, Natal.*
1892		Fisher, George, J.P., M.H.R. (*Chevalier of the Order of Crown of Italy*), *Hill-street, Wellington, New Zealand.*
1900		Fisher, Professor Irving, Ph.D., *Mission-hill, Santa Barbara, California, U.S.A.*
1888		Fisher, Walter Newton, F.C.A., 4, *Waterloo-street, Birmingham.*
1898		Fisk, George William Victor, 142, *Holborn-bars, E.C.*
1885		*Fitz-Gerald, Lt.-Col. Wm. G., M.A., F.R.Hist.S., F.R.S.L., *Conneragh, Youghal, Ireland.*
1900	d	Fleming, Owen, Assoc. R.I.B.A., 25, *Cockspur-street, S.W.*
1896		Fletcher, Benton, 44, *Bankside, Southwark, S.E.*
1893	d p	*Flux, Professor Alfred William, M.A. (*Owen's College*), 57, *Parsonage-road, Withington, Manchester.*

Year of Election.			
1882			Foley, Patrick James (*Pearl Insurance Company*), *Adelaide-place, London Bridge, E.C.*
1896	d		Folkmar, Professor Daniel, D.S.S., D.U., Paris. *University of Chicago, Ill., U.S.A.*
1889			Foot, Alfred, *Thurles, 35, Thornhill-road, Croydon.*
1898	d		Forster, John Walter, 3, *Ossington-villas, Nottingham.*
1893			Fortune. David, J.P., 84, *Wilson-street, Glasgow; and* 19, *Rowallan-gardens, Partick, Glasgow.*
1884			Fosbery, William Thomas Exham, *The Castle-park, Warwick.*
1897			Fountain, H., 44, *Parliament-street, S.W.*
1899	c	p	FOWLER, THE RIGHT HON. SIR HENRY HARTLEY, G.C.S.I., M.P. (*Honorary Vice-President*), 9, *Clements-lane; and* 191, *Queen's Gate, S.W.*
1868	c		Fowler, William, 43, *Grosvenor-square, W.*
1900			Fox, Arthur Wilson, *Asst. Labour Commr., Board of Trade, S.W.*
1893			Fox, Stephen Newcome, 12, *Cromwell-crescent, South Kensington, S.W.*
1878	c d		Foxwell, Professor H. Somerton, M.A., *St. John's College, Cambridge.*
1894			Francis, Joseph, 10, *Finsbury-square, E.C.*
1887			Frankland, Frederick William, F.I.A., *New York Life Office*, 346, *Broadway, New York.*
1899			Franklin, Arthur Ellis, 21, *Cornhill, E.C.*
1886	d		Fream, Professor William, B.Sc.,Lond., LL.D., F.L.S., F.G.S., *The Vinery, Downton, Salisbury.*
1887			Freeman, T. Kyffin, F.G.S., 35, *Whitehall-park, N.*
1890			Freestone, John, 9, *Arthur-street, Nottingham.*
1886			Fuller, George Pargiter, *Neston-park, Corsham, Wilts.*
1878			Fuller, William Palmer, 2, *Verulam-buildings, Gray's Inn, W.C.*

Year of Election.		
1852		Galsworthy, Sir Edwin Henry, J.P., 26, *Sussex-place*, *Regent's-park*, *N.W.*
1860	*c d p*	Galton, Francis, F.R.S., F.R.G.S., 42. *Rutland-gate*, *S.W.*
1887		Garcke, Emile, *Donington House*, *Norfolk-street*, *Strand*, *W.C.*
1889	*d*	Garland, Nicholas Surrey, *Finance Department*, *Ottawa*, *Canada.*
1899		Garnon, Edward William, 63, *Moorgate-street*, *E.C.*
1895		Garvan, John Joseph, *Citizen's Life Assurance Co.*, *Sydney*, *N.S.W.*
1880		*Gates, John Benjamin, A.C.A., 47, *Warwick-street*, *Regent-street*, *W.*
1899		Gelling, Benjamin Richard, *Mutual Life Assn. of Australasia*, 5, *Lothbury*, *E.C.*
1896		Gerlich, Hermann Gustav, Dr. Jur., 70, *Avonmore-road*, *West Kensington*, *W.*
1885		Gibb, George S., *North-Eastern Railway Company*, *York.*
1871		Gibbs, George Sleight, *Marsh End*, *Hope*, *Sheffield.*
1889	*d*	Gibson, George Rutledge, 55, *Broadway*, *New York City*, *U.S.A.*
1867	*c d p*	*GIFFEN, SIR ROBERT, K.C.B., LL.D., F.R.S. (*Honorary Vice-President*), 40, *Brunswick-road*, *Hove*, *Brighton.*
1877		Gilbert, William H. Sainsbury, 70, *Queen-street*, *Cheapside*, *E.C.*
1900		Gladwell, Sydney William, 28, *Victoria-street*, *S.W.*
1878		*Glanville, Silvanus Goring, *Lloyd's*, *E.C.*
1860	*c p*	Glover, Sir John, J.P., 88, *Bishopsgate-street Within*, *E.C.*
1888		Goad, Charles E., M. Am. and Can. Soc. C.E., 53, *New Broad-st.*, *E.C.*; *and Montreal*, *Canada.*
1897	*c d p*	GOMME, GEORGE LAURENCE, F.S.A., 24, *Dorset-square*, *Marylebone*, *N.W.*
1884	*d*	*Gonner, Professor Edward C. K., M.A., *University College*, *Liverpool.*
1885		Goodsall, David Henry, F.R.C.S., 17, *Devonshire-place*, *W.*
1900	*d*	Goodsir, George (*Weddel & Co.*), 16, *St. Helen's-place*, *E.C.*
1892		Goodwin, Alfred, M.A., 2, *Charles-road*, *St. Leonards*, *Sussex.*
1899		Gordon, Charles H. F., 40*a*, *Park-road East*, *Acton.*

Year of Election.			
1868	*c*	*p*	GOSCHEN, THE RIGHT HON. VISCOUNT, (*Honorary Vice-President*), *Seacoxheath, Hawkhurst, Kent.*
1855			*Gosset, John Jackson, *Thames Ditton, Surrey.*
1899			Gouge, Herbert Dillon, *Public Actuary, Adelaide, S.A.*
1885			Goulding, William Purdham, F.S.I., 41, *Moorgate-st., E.C.; and* 18, *Mercers-rd., N.*
1887			Gover, Frederic Field, 10, *Lee-park, Blackheath, S.E.*
1900			Graham, P. Anderson, 1, *Buxton-road, Chingford, Essex.*
1893			*Gray, The Hon. James McLaren, M.A., F.R.G.S., 6, *Albemarle-street, Piccadilly, W.*
1895	*d*		Green, John Little, *Langholm, Embleton-road, Lewisham, S.E.*
1888			Green, Joseph Shaw, 11, *Mill-street, Warrington.*
1895			Gretton, John, M.P., *Burton-on-Trent.*
1887			Gribble, George J., *Henlam Grange, Biggleswade.*
1868			Griffith, Edward Clifton, *Reliance Office*, 71, *King William-street, E.C.*
1878			Guthrie, Charles, F.C.A., *London Bank of Australia, Melbourne, Victoria.*
1885	*d*		Guthrie, Edwin, *Victoria-park, Manchester.*
1887	*d*		Guyot, Yves (*Deputé*), 95, *Rue de Seine, Paris.*
1880			*Gwynne, James Eglinton A., J.P., F.S.A., *Folkington Manor, Polegate, Sussex.*
1887			Gwyther, John Howard, 13, *Lancaster-gate, W.*
1892	*d*		Hadfield, Robert A., *Fairfield, Sheffield.*
1873	*d*		*Haggard, Frederick T., 1, *Broadwater Down, Tunbridge Wells.*
1887			Haldeman, Donald Carmichael, *Mutual Life Insurance Co. of New York,* 17 *&* 18, *Cornhill, E.C.*

Year of Election.			
1883			Hall, Sir John, K.C.M.G., *Hororata, Canterbury, New Zealand.*
1897	*d*		Hall, Thomas, *Railway Commissioners' Offices, Sydney, N.S.W.*
1878			Hallett, Thomas George Palmer, M.A., *Claverton Lodge, Bath.*
1887	*d*		Hamilton, Sir Edward W., K.C.B., *The Treasury, Whitehall, S.W.*
1873	*c*	*p*	Hamilton, The Right Hon. Lord George Francis, M.P. 17, *Montagu-street, Portman-square, W.*
1884			*Hammersley, Hugh Greenwood, 14, *Chester-square, S.W.*
1885			*Hancock, Charles, M.A., 2, *Cloisters, Temple, E.C.; and Reform Club, S.W.*
1875			Hankey, Ernest Alers, *Hinxton Hall, Saffron Walden, Essex.*
1876			Hansard, Luke, 68, *Lombard-street, E.C.*
1871			*Harcourt, Right Hon. Sir William Vernon, Q.C., M.P., F.R.S., *Reform Club, S.W.*
1886			*Hardcastle, Basil William, 12, *Gainsborough-gardens, Hampstead, N.W.*
1900			Hardcastle, Frank, 87, *Lancaster-gate, W.*
1883			Harding, G. P., *Golfers' Club, Whitehall-court, S.W.*
1900			Hardingham, Frederick Robert, 88, *Albion-street, Leeds.*
1884			Hardy, George Francis, F.I.A., *Universal Life Ass. Soc*, 1, *King William-st., E.C.*
1893			Harrap, Thomas, 143, *Stamford-street, Ashton-under-Lyne, Lancs.*
1868			Harris, David, *Caroline-park, Granton, Edinburgh.*
1899			Harris, Frank Drew, M.B. (Lond.), D.P.H., *Cowley-hill, St. Helens, Lancashire.*
1897			Harris, Walter Fred, F.I.C.A., 16, *Parliament-street, Hull.*
1887			Harris, William A., F.R.S.S.A., *Phœnix Chambers, Exchange, Liverpool.*
1882		*p*	Harris, William James, *Halwill Manor, Beaworthy, N. Devon.*
1900			Hartley, Edwin Leach, M.A., 4, *Paper-buildings, Temple, E.C.*
1881	*c*		Harvey, Alfred Spalding, B.A., 67, *Lombard-street, E.C.*
1899			Harvey, Baldwin S., 67, *Lombard-street, E.C.*

Year of Election.		
1896		Hawkins, Willoughby R., *Bute Docks, Cardiff.*
1897		Hayakawa, S., *The Treasury, Tokio, Japan.*
1895	*d*	Haynes, Thomas Henry, *Rough Down, Boxmoor, Herts.*
1898	*d p*	Hayward, Thomas Ernest, M.B. (Lond.), F.R.C.S., *Clipsley Lodge, Haydock, near St. Helens.*
1896		Heap, George, *The Charterhouse, Charterhouse-square, E.C.*
1887		*Heap, Ralph, 1, *Brick-court, Temple. E.C.*
1896		*Heaton-Armstrong, William Charles, J.P., 30, *Portland-place, W.*
1884		Hedley, Robert Wilkin, 41, *Parliament-street, Westminster, S.W.*
1889		*Hemming, Arthur George, F.I.A., 12, *King William-street, E.C.*
1865		Hendriks, Augustus, F.I.A., 7, *Cornhill, E.C.*
1855	*c d p*	***Hendriks, Frederick**, F.I.A., 7, *Vicarage-gate, Kensington, W.*
1897		Hepburn, Arnold, 21, *Lingfield-road, Wimbledon.*
1888		Heriot, George (*J. Pirie & Co.*), 5, *Whittington-av., Leadenhall-st., E.C.*
1898		Herring, George, 1, *Hamilton-place, Piccadilly, W.*
1899		Hertz, Henry Anthony, 29, *Buckingham Palace Mansions, S.W.*
1898		Hewart, Miss Beatrice, B.Sc., Lond., 43, *Parliament-street, S.W.*
1881	*d*	Hewat, Archibald, F.I.A., F.F.A., 22, *George-street, Edinburgh.*
1890	*d*	Hewins, Professor W. A. S., M.A., 10, *Adelphi-terrace, W.C.; and The Rowans, Putney Lower Common, S.W.*
1895		Hewitt-Fletcher, Stanley, A.C.A., *Administration House, Zomba, B.C.A.*
1886		Hibbert, H. F., 8, *Park-road, Chorley, Lancashire.*
1892	*c d p*	*Higgs, Henry, LL.B., *The Treasury, Whitehall, S.W.*
1878		*Hill, Frederick Morley, 22, *Richmond-road, Barnsbury, N.*
1900		Hillingdon, The Right Hon. Lord, 67, *Lombard-street, E.C.*
1879		Hoare, H. N. Hamilton, 121, *Sloane-street, S.W.*

Year of Election.		
1897	*d*	Hodgson, William Gill, F.S.A.A., *Municipal Buildings, West Hartlepool.*
1889		Hogg, Quintin (Alderman), 2, *Cavendish-place, W.*
1888		Hollams, John, 52, *Eaton-square, S.W.*
1895		Holland, Hon. Lionel Raleigh, B.A., 15, *Savile-row, W.*
1898		Holland, Robert Martin, 68, *Lombard-street, E.C.*
1894	*d p*	Hollerith, Herman, Ph.D., &c., 1054, 31*st-street, Washington, D.C., U.S.A.*
1900		Holliday, John, M.A., F.I.A., 1, *Grove-road, New Southgate, N.*
1888		Hollington, Alfred J., *Aldgate, E.*
1891	*d*	Hooker, Sir Joseph Dalton, G.C.S.I., F.R.S., &c., *The Camp, Sunningdale.*
1895	*d p*	*Hooker, Reginald Hawthorn, M.A., 3, *Gray's Inn-place, W.C.*
1896		Hooper, Angus, *Montreal, Canada.*
1879		Hooper, George Norgate, *Elmleigh, Hayne-road, Beckenham, Kent.*
1878	*c p*	Hooper, Wynnard, B.A., 13, *Sumner-place, Onslow-square, S.W.*
1887		Hopkins, John, *Little Boundes, Southborough, Kent.*
1899		Hopkins, John Castell, 51, *Richmond-street West, Toronto.*
1896		*Hopkinson, Samuel Day, 75, *Old Broad-street, E.C.*
1900		Hopper, Charles T., 149, *Broadway, New York, U.S.A.*
1894		Houldsworth, Sir William H., Bart., M.P., 35, *Grosvenor-place, S.W.*
1883		Howell, Francis Buller, 2, *Middle Temple-lane, E.C.*
1883	*d*	Howell, George, *Hampden House, Ellingham-road, Shepherd's Bush, W.*
1897	*p*	Howell, Price, *Lindfield, near Sydney, N.S.W.*
1900		Howell, Walter J., *Board of Trade, S.W.*
1864	*d*	Hudson, Thomas, 8, *Helix-gardens, Brixton, S.W.*
1894		Hughes, Arthur John, C.I.E., M.I.C.E., 14, *Jairington-gardens, Eastbourne.*

Year of Election.		
1874	c d p	HUMPHREYS, NOEL ALGERNON (*Hon. Secretary*), *General Register Office, Somerset House, Strand.*
1893		Humphreys-Owen, Arthur Charles, M.P., *Glansevern, Garthmyl, Montgomeryshire.*
1883		Hunt, Richard Aldington, A.I.A., *County-buildings, Corporation-street, Birmingham.*
1900		Hunt, William C., *Census Office, Washington, D.C., U.S.A.*
1888		Hunter, George Burton, *Wallsend-on-Tyne.*
1890		Huth, Ferdinand M., 12, *Tokenhouse-yard, E.C.*
1888		Hyde, Clarendon G., 75, *Gloucester-terrace, Hyde-park, W.*
1887		Hyde, Henry Barry, 5, *Eaton-rise, Ealing, W.*
1893	d	Hyde, Hon. John, 1458, *Euclid-place, Washington, D.C., U.S.A.*

1897		Ingall, Godefroi Drew, F.I.S., *Auckland, New Zealand.*
1874	d p	*Ingall, William Thomas Fitzherbert Mackenzie, 13, *Pinfold-road, Streatham, S.W.*
1869		*Inglis, Cornelius, M.D., *Athenæum Club, S.W.*
1899		Ingram, Eustace, 24, *Princess-road, Brownswood-park, N.*
1887		Irvine, Somerset William D'Arcy, J.P., *Equitable Life Office of United States, Brisbane.*
1864		*Ivey, George Pearse, 39, *Denmark-villas, West Brighton.*

1880		*Jackson, The Right Hon. William Lawies, M.P., *Chapelallerton, Leeds.*
1894		Jamieson, George, C.M.G., *The Thatched House Club, St. James's-st., S.W.*

Year of Election.		
1872	c p	Janson, Frederick Halsey, F.L.S., 22, *College-hill, Cannon-street, E.C.*
1897		Jay, E. Aubrey Hastings, *Tower House, Woolwich.*
1896	d	Jenney, Charles Albert, 58, *William-street, New York City, U.S.A.*
1898		Jennings, Arthur Seymour, 62, *Barry-road, East Dulwich, S.E.*
1881		*Jersey, The Right Hon. the Earl of, P.C., G.C.B., *Osterley-park, Isleworth.*
1881		Johnson, Edwin Eltham, 110, *Cannon-street, E.C.*
1891	d	Johnson, George, 8, *The Terrace, Palmerstone-road, Wealdstone.*
1888		Johnson, John Grove, 23, *Cross-street, Finsbury, E.C.*
1880		Johnson, Walter, *Rounton Grange, Northallerton.*
1897		Johnston, James, *National Liberal Club, S.W.*
1878	d	Johnstone, Edward, *Queensbury, South-road, Clapham-park, S.W.*
1884		*Jones, Edwin, J.P., 141, *Cannon-street, E.C.*
1894	d p	Jones, Hugh Richard, M.A., M.D., 58*a*, *Grove-street, Liverpool.*
1888		Jones, J. Mortimer, 12, *Nicholas-lane, E.C.*
1877		Jones, Theodore Brooke, 70, *Gracechurch-street, E.C.*
1888	d	*Jordan, William Leighton, 25, *Jermyn-street, S.W.*
1858	c d p	Jourdan, Francis, *Normount, Torquay, Devon.*
1889		Justican, Edwin, F.I.A., *St. Mildred's House, Poultry, E.C.*

1898		Karminski, Eugene, *Credit Lyonnais*, 40, *Lombard-street, E.C.*
1895		Karpeles, Benno, LL.D., xix/2 *Arm Crustergasse* 6, *Vienna.*
1873		Kay, Duncan James, *Drumpark, Dumfries, N.B.*

Year of Election.		
1885		Keen, William Brock, 3, *Church-court, Old Jewry, E.C.*
1884		Kelly, Edward Festus, 182—184, *High Holborn, W.C.*
1883	*c d*	KELTIE, JOHN SCOTT, F.R.G.S., LL.D., 27, *Compayne-gardens, West Hampstead.*
1884	*d*	Kemp, John, 46, *Cannon-street, E.C.*
1884	*c d*	*Kennedy, Sir Charles Malcolm, K.C.M.G., C.B., 4, *Louisa-terrace, Exmouth, South Devon.*
1886		Kennedy, John Gordon, *Foreign Office, S.W.*
1878		Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1881	*c*	*Kennett-Barrington, Sir V. Hunter, M.A., LL.M. 57, *Albert Hall Mansions, S.W.*
1898		Kent, Arthur C., 47, *Buckingham Palace-road, S.W.*
1895		*Kenyon, James, M.P., *Walshaw Hall, Bury, Lancashire.*
1899		Kershaw, John Baker C., F.I.C., *Faraday House, Charing Cross-road, W.C.*
1883		*Keynes, John Neville, M.A., D.Sc., 6, *Harvey-road, Cambridge.*
1884		Kimber, Henry, M.P., 79, *Lombard-street, E.C.*
1852		Kimberley, The Right Hon. the Earl of, M.A., P.C., 35, *Lowndes-square, S.W.*
1898	*d*	*King, Arthur William Waterlow, *Orchard House, Gt. Smith-st., Westminster, S.W.*
1883		*King, Bolton, B.A., *Gaydon, Warwick.*
1900		Kinnear, Walter Samuel, B.A., *Royal Exchange Ass. Co., 5, College-grn., Dublin.*
1894		Kirkcaldy, William Melville, *Eglinton, Dunedin, Otago, New Zealand.*
1888		*Kitson, Sir James, Bart., M.P., J.P., *Gledhow Hall, Leeds.*
1889		Kloetgen, W. J. H., 34, *Gutter-lane, Cheapside, E.C.*
1899	*d*	Knights, John Martin, 39, *Tennyson-avenue, East Ham, Essex.*
1878		*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*

Year of Election.		
1900		Lake, Cuthbert Joseph, F.S.I., 25, *Bucklersbury, E.C.; and Heage House, Crouch-hill, N.*
1897		Lamperd, Frederick, *Normanville, Constitution-hill, Ipswich.*
1885	*d*	Latham, Baldwin, M.Inst. C.E., *Parliament-mansions, Victoria-street, S.W.*
1892		Latham, Stanley A., A.C.A., 2, *Hare-court, Temple, E.C.*
1897	*d*	*Lawrence, Frederick William, M.A., *Mansfield House, Canning Town, E.*
1890		Lawson, William Ramage, *Finchley Lodge, North Finchley.*
1883	*d*	*Leadam, Isaac Saunders, M.A., 1, *The Cloisters, Temple, E.C.; and Reform Club, S.W.*
1886		Leathes, Stanley M., *Trinity College, Cambridge.*
1899		Lee, Arthur, 10, *Berkeley-square, Clifton, Bristol.*
1879		*Leete, Joseph, 36, *St. Mary-at-hill, E.C.; and Eversden, S. Norwood-park.*
1899		L'Estrange, Charles James, 6, *Blythswood-square, Glasgow.*
1877	*c d p*	Lefevre, The Right Hon. George Shaw, M.A., J.P. (*Honorary Vice-President*), 18, *Bryanston-square, W.*
1887		Leitch, Alexander (*Scottish Provident Institution*), 17, *King William-street, E.C.*
1892		Leon, Herbert Samuel, *Bletchley-park, Bletchley, Bucks.*
1888		*Le Poer-Trench, Col. The Hon. W., R.E., J.P., 3, *Hyde Park-gardens, W.*
1887		*Le-Roy-Lewis, Herman, B.A., *Westbury House, Petersfield, Hants.*
1898		Leveaux, Arthur Michael, A.I.A., 28, *Abingdon-street, Westminster, S.W.*
1862		Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1888		*Liberty, A. Lasenby, *The Manor House, The Lee, near Gt. Missenden, Bucks.*
1884		*Lines, William Edward, 2, *Essex-court, Temple, E.C.*
1898		Litkie, Valerian A., 39, *South-street, W.*

Year of Election.		
1892		Llewelyn, Sir John T. D., Bart., *Penllergare, Swansea.*
1879		Lloyd, Wilson, J.P., F.R.G.S., *Park Lane House, Wood-green, Wednesbury.*
1888	*c d p*	LOCH, CHARLES S., B.A., *Drylaw Hatch, Oxshott, Leatherhead.*
1900		Logan, James Patterson, 6, *Springfield-gardens, Springfield, Clapton, N.*
1882	*c d p*	*LONGSTAFF, GEORGE BLUNDELL, M.A., M.D., F.R.C.P., *Highlands, Putney Heath, S.W.*
1876		*Lornie, John Guthrie, J.P. (*of Birnam & Pitcastle*), *Rosemount, Kirkcaldy, N.B.*
1892	*d*	Lough, Thomas, M.P., 49, *Ashley-gardens, Westminster, S.W.*
1886		*Low, Malcolm, 22, *Roland-gardens, S.W.*
1895		Lowe, Thomas Enoch, F.S.A.A., 89, *Darlington-street, Wolverhampton.*
1878		Lucas, Sir Thomas, Bart., J.P., *Broad Sanctuary-chambers, Westminster, S.W.*
1875		*Mabson, Richard Rous, "*The Statist*," 51, *Cannon-street, E.C.*
1873		*Macandrew, William, J.P., *Westwood House, near Colchester.*
1894		Macaulay, Thomas Bassett, *Sun Life Assurance Co., Montreal, Canada.*
1884		McCabe, William, LL.B., F.I.A. (*North American Life Ass. Co.*), 112 *to* 118, *King-street West, Toronto, Canada.*
1888		McCankie, James, 63, *George-street, Edinburgh.*
1867		M'Clean, Frank, *Rusthall House, Tunbridge Wells.*
1892		McCleery, James Carlisle, 7, *Upper Fountain-street, Leeds.*
1897		MacDonald, Mrs. Margaret Ethel, 3, *Lincoln's Inn Fields, W.C.*
1898		*Macdonald, Robert Alexander, *Royal Bank of Scotland, Edinburgh.*
1872	*c d p*	MACDONELL, JOHN, C.B., LL.D., *Room* 183, *The Royal Courts of Justice, W.C.*
1873		*McEwen, Laurence T., *c/o. R. A. McLean*, 1, *Queen Victoria-st., E.C.*
1899	*d*	McHardy, Coghlan McLean, J.P., 1, *Greville-place, Cromwell-road, S.W.*

Year of Election.		
1900		Mackay, Thomas, 14, *Wetherby-place, S.W.*
1886		*Mackenzie, Colin, F.R.G.S.,
1878		McKewan, William, *Elmfield, Bickley, Kent.*
1876		*McLean, Robert Allan, F.R.G.S., 1, *Queen Victoria-street, E.C.*
1900		Macleod, Reginald, C.B. (*Registrar-General*), *Somerset House, W.C.*
1863		*Maclure, Sir John William, Bart., M.P., J.P., D.L., *Carlton Club; and The Home, Whalley Range, Manchester.*
1888	*d*	McNiel, Henry, 10, *Walbrook, E.C.*
1875		Macpherson, Hugh Martin, F.R.C.S. (*Inspector-General*), 6, *Arlington-street, S.W.*
1882		MacRosty, Alexander, *West Bank, Esher.*
1899		*MacWharrie, Niel Matheson, *Conservative Club, St. James's, S.W.*
1891		Maidment, Thomas, *Insurance Chambers, King's-road, Southsea.*
1887		Malleson, Frank R., *Dixton Manor House, Winchcombe, Cheltenham.*
1884		*Manson, Frederick William, *Ringmer, near Lewes, Sussex.*
1888		Manuel, James, 36, *Vittoria-street, Ottawa, Canada.*
1877		*Maple, Sir John Blundell, Bart., M.P., 8, *Clarence-terrace, Regent's-park, N.W.*
1880	*c d p*	*Marshall, Professor Alfred, M.A., *Balliol Croft, Madingley-road, Cambridge.*
1887		Marshall, W. Bayley, M.Inst.C.E., M.Inst.M.E., *Struan, Richmond Hill, Edgbaston, Birmingham.*
1887		Martin, James, 4, *King-street, Cheapside, E.C.*
1899		Martin, John Roxburgh, *The Treasury, Sydney, N.S.W.*
1872	*c d p*	*MARTIN, RICHARD BIDDULPH, M.A., M.P. (*Vice-President and Treasurer*) 10, *Hill-street, Berkeley-square, W.*
1884		Mason, William Arthur, 31*a*, *Colmore-row, Birmingham.*
1898		Massingberd, Stephen, B.A., *Gunby Hall, Burgh, Lincolnshire.*
1875		*Mathers, John Shackleton, *Hanover House, Leeds, Yorkshire.*

Year of Election.		
1882		Medhurst, John Thomas, F.S.A.A., *City of London College, White-street, Moorfields, E.C.*
1853		*Meikle, James, F.I.A., 6, *St. Andrew's-square, Edinburgh.*
1899		Mendl, Sigismund Ferdinand, 14, *Devonshire-street, Portland-place, W.*
1884		Merton, Zachary, 6, *Green-street, Park-lane, W.*
1899		Miller, James William, M.A., *Marine Lodge, Claremont-road, Howth, Co. Dublin.*
1900		Miller, John W., *Scottish Widows' Fund*, 28, *Cornhill, E.C.*
1889		Mills, Major Henry Farnsby,
1892	*c d*	Milner, His Excellency Sir Alfred, G.C.M.G., K.C.B., *Government House, Cape Town.*
1882	*p*	Milnes, Alfred, M.A., 44, *Goldhurst-terrace, S. Hampstead, N.W.*
1899		Mistri, Nusserwanji Rustomji, 4, *Bruce-lane, Fort-Bombay.*
1874		*Mocatta, Frederick D., F.R.G.S., 9, *Connaught-place, W.*
1900		Modi, Limji Cursetji, M.S.A., F.I.Inst., *Palli Hill, Bandora, Bombay.*
1878		Moffat, Robert J., *Bank House, Cambridge.*
1888	*d*	*Molloy, William R. J., M.R.I.A. (*National Education Board*), 78, *Kenilworth-square, Rathgar, Dublin.*
1899		*Moon, Edward Robert Pacy, M.P., 32, *Egerton-gardens, W.*
1887		Moore, Arthur Chisholm, 23, *Essex-street, Strand, W.C.*
1874		Moore, Charles Rendall 137, *Brockley-road, Lewisham High-road, S.E.*
1878		*Moore, John Byers Gunning, *Loymount, Cookstown, Ireland.*
1899		Morgan, Edward (*Prudential Ass. Co., Ltd.*), 5, *Stepney-street, Llanelly, S. Wales.*
1893	*d*	Morgan, Percy Charlton, 5, *Victoria-street, S.W.*
1874		*Morris, James, M.D., F.R.C.S., 13, *Somers-place, Hyde Park-square, W.*
1888		Morris, John (17, *Throgmorton-avenue, E.C.*), 34, *Hyde Park-square, W.*
1899		Morris, Thomas Morgan, F.R.C.I., 45, *Queen-street, Neath, South Wales.*

Year of Election.		
1891	c d p	MORRISON, REV. WILLIAM DOUGLAS, LL.D. 2, *Embankment-gardens*, *Chelsea*, *S.W.*
1885		*Mosley, Tonman, *Bangors*, *Iver*, *Uxbridge.*
1886	c	MOWBRAY, SIR ROBERT GRAY CORNISH, Bart., M.P. 10, *Little Stanhope-street*, *S.W.*
1886	d	Moxon, Thomas B., *Lancs. and Yorks. Bank*, *King-st.*, *Manchester.*
1889		Muir, Robert, junr., *Clydesdale*, *Wolseley-road*, *Crouch-end*, *N.*
1883		Muirhead, Henry James, *Fairfield*, *Hythe*, *Kent; and Reform Club*, *S.W.*
1899	d	Muirhead, James Muirhead Potter, *Grahamstown*, *South Africa.*
1899		Mukerji, Benoy Vehari, B.A., B.Litt., *St. Andrew's College*, *Gorukhpur*, *N.W.P.*, *India.*
1897	d	Mullins, George Lane, M.A., M.D., *Murong*, *Albion-street*, *Waverley*, *Sydney*, *N.S.W*
1891	d	Murphy, Shirley Foster, M.R.C.S., 22, *Endsleigh-street*, *Tavistock-square*, *W.C.*
1878	d	Murray, Adam, *Hazeldean*, *Kersal*, *Manchester.*
1892		Naoroji, Dadabhai, *Washington House*, 72, *Anerley-park*, *S.E.*
1878		*Nathan, Henry,
1869	c d p	NEISON, FRANCIS GUSTAVUS PAULUS, F.I.A., 93, *Adelaide-road*, *South Hampstead.*
1895		Nesbitt, Thomas Huggins (*Vestry Clerk*), *Mount-street*, *Grosvenor-square*, *W.*
1897	d	Neumann, Joseph Oscar, 139, *Salisbury-court*, *Fleet-street*, *E.C.*
1877		Nevill, Charles Henry, 11, *Queen Victoria-street*, *E.C.*
1900		Newcomb, Harry T., LL.M. *Columbia University*, *Washington D.C.*, *U.S.A.*
1894		Newey, William Lewis, F.S.A.A., 39, *Temple-row*, *Birmingham.*
1889	d p	Newsholme, Arthur, M.D., 11, *Gloucester-place*, *Brighton.*
1895	c	*Nicholson, Charles Norris, 35, *Harrington-gardens*, *South Kensington*, *S.W.*

Year of Election.		
1878	*d p*	Nicholson, Professor J. Shield, M.A., D.Sc., *University of Edinburgh.*
1858	*d*	Nightingale, Miss Florence, 10, *South-street, Park-lane, W.*
1871		*Noble, Benjamin, F.R.A.S., *Westmorland House, Low Fell, Gateshead.*
1877	*d*	Norman, General Sir Henry Wylie, K.C.B., G.C.M.G. 85, *Onslow-gardens, S.W.*
1900		North, Simon Newton Dexter, 70, *Kilby-street, Boston, Mass., U.S.A.*
1889		Northampton, The Most Hon. the Marquess of, 51, *Lennox-gardens, S.W.*
1878		Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L., 4, *Hamilton-place, Piccadilly W.*
1888		Oakley, Sir Henry, 37, *Chester-terrace, Regent's-park, N.W.*
1899		O'Connor, John Edward, M.B., B.Ch., 1, *Surrey-street, Lowestoft.*
1898		O'Connor, Percival C. Scott, *Chapra, Bengal, India.*
1893		O'Connor, Vincent C. Scott, *Authors' Club*, 3, *Whitehall-court; and c/o W. Watson & Co.*, 7, *Waterloo-place, S.W.*
1880		*Oelsner, Isidor,
1885	*c d p*	Ogle, William, M.A., M.D., F.R.C.P., &c., 10, *Gordon-street, Gordon-square, W.C.*
1885	*d*	*Oldham, John, *River Plate Telegraph Company, Montevideo.*
1884		Oldroyd, Mark, M.P., *Hyrstlands, Dewsbury, Yorkshire.*
1896		Olney, George Washington, LL.B., 58, *William-street, New York City, U.S.A.*
1892	*c*	Onslow, The Right Hon. the Earl of, G.C.M.G., *Clandon-park, Guildford, Surrey.*
1878		Oppenheim, Henry, 16, *Bruton-street, Bond-street, W.*
1877		Ormond, Richard, 24, *Grainger-street West, Newcastle-on-Tyne.*
1899		Ormsby, John Yeaden, *Ontario Mutual Life Ass. Co., Woodstock, Ontario.*

Year of Election.		
1894	*d*	Owen, Edgar Theodore, *Registrar of Friendly Societies, Perth, W.A.*
1887	*d*	Owen, Evan Frederick, A.I.A., *Actuary for Friendly Societies, Melbourne*
1887	*d*	*Page, Edward D. (*Faulkner, Page, & Co.*), *Box* 843, 60, *Worth-street, New York City.*
1886		Pain, James, *Lowlands, Wallington, Fareham.*
1899		Paish, George, "*The Statist*," 51, *Cannon-street, E.C.*
1866	*c d p*	*Palgrave, Robert Harry Inglis, F.R.S., *Belton, Great Yarmouth, Norfolk.*
1888		Pannell, William Henry, F.C.A., *Library Chambers, Basinghall-street, E.C.*
1878		Park, David Francis, C.A., F.F.A., A.I.A., 39, *Lombard-street, E.C.*
1887		Parker, Archibald, *Camden Wood, Chislehurst, Kent.*
1878		Parry, Thomas, *Grafton House, Ashton-under-Lyne.*
1883		Paterson, John, 1, *Walbrook, E.C.*
1888		Pattullo, James Durie, 71, *King William-street, E.C.*
1877		Paul, Henry Moncreiff, 12, *Lansdowne-crescent, Notting-hill, W.*
1878		Paulin, David, 6, *Forres-street, Edinburgh.*
1893	*d*	Payne, Alexander William, F.C.A., 70, *Finsbury-pavement, E.C.*
1884		*Peace, Sir Walter, K.C.M.G., 26, *Victoria-street, Westminster, S.W.*
1880		*Pease, Sir Joseph Whitwell, Bart., M.P., *Hutton Hall, Gisborough, Yorks.*
1895		Peixotto, M. Percy (*U.S. Equitable Life Office*), 36^{bis}, *Avenue de l'Opéra, Paris.*
1891	*d*	Penn-Lewis, William, 48, *Springfield-road, Leicester.*
1894	*d*	Perris, George Herbert (*Literary Agency of London*), 5, *Henrietta-street, W.C.*
1890		Peters, John Wyatt, 5, *King's-road, Southsea.*

Year of Election.		
1883		Petheram, Frederick William, F.C.A., *Moorfield-chmbrs., 95, Finsbury-pavement, E.C.*
1886		Peto, Sir Henry, Bart., M.A., *Chedington Court, Misterton, Crewkerne, Somersetshire.*
1887		Phelps, Lieut.-General Arthur, 23, *Augustus-road, Edgbaston, Birmingham.*
1886	*d*	*Phelps, The Rev. Lancelot Ridley, M.A., *Oriel College, Oxford.*
1895		Phillips, Robert Edward (A.M.Inst.C.E.), 70, *Chancery-lane, E.C.*
1871	*d*	*Pickering, John, F.R.G.S., F.S.A., 86, *Thicket-road, Anerley, S.E.*
1898		Pietersen, James Frederick Gerhard, L.R.C.P., M.R.C.S., *Ashwood House, Kingswinford, Dudley.*
1900		Pigou, Arthur Cecil, B.A., *King's College, Cambridge.*
1878	*d*	*Pim, Joseph Todhunter, *Rinnamara, Monkstown, Co. Dublin.*
1886		Pink, J. Francis, 62, *Chandos-street, Strand, W.C.*
1877		Pirbright, The Right Hon. Lord, *Carlton Club, Pall Mall, S.W.*
1890	*c d*	PITTAR, THOMAS JOHN, C.B., *H.M. Custom House, E.C.*
1881		Planck, Charles, M.R.C.S. (*Deputy Surgeon-General*).
1883	*d*	Platt, James, 19, *Roslyn Hill, Hampstead, N.W.*
1895		Platt-Higgins, Frederick, M.P., *Homeleigh, Bowdon, Cheshire.*
1861	*c d*	Plowden, Sir William Chicele, K.C.S.I., 5, *Park-crescent, Portland-place, W.; and Aston Rowant House, Tetsworth, Oxon.*
1888		Pollard, James, J.P., *Chamber of Commerce, Edinburgh.*
1884		Polson, John, *West Mount, Paisley, N.B.*
1896		*Pontifex, Bryan, A.C.A., *East India Railway Co., Calcutta.*
1891		Pope, Henry Richard, *Iddesleigh Mansions, Westminster, S.W.*
1891		Potter, Henry, 222, *Queen's-road, New Cross Gate, S.E.*
1879	*c d*	*POWELL, SIR FRANCIS SHARP, Bart., M.P. (*Vice-President*), *Horton Old Hall, Bradford; and* 1, *Cambridge-square, Hyde-park, W.*

Year of Election.		
1895		Powell, Thomas Edmund, *Oakridge, Dorking.*
1871		Power, Edward, 16, *Southwell-gardens, South Kensington, S.W.*
1877		*Prance, Reginald Heber, *Frognal, Hampstead, N.W.*
1877	*d*	Praschkauer, Maximilian, *St. Alban's-mansions, Kensington-court, S.W.*
1867		*Pratt, Robert Lindsay, 80, *Bondgate, Darlington.*
1896		Pretyman, Captain Ernest George, M.P., *Orwell-park, Ipswich.*
1887	*c d p*	*Price, L. L., M.A., *Oriel College, Oxford.*
1877	*c d p*	Price-Williams, Richard, M.Inst.C.E., 15, *Victoria-street, S.W.*
1897	*d*	Primrose, Sir Henry William, K.C.B., C.S.I., *Inland Revenue Office, Somerset House, W.C.*
1887	*c d p*	Probyn, Lesley Charles (*Vice-President*). 79, *Onslow-square, S.W.*
1889		Probyn, Lieut.-Colonel Clifford, 55, *Grosvenor-street, Grosvenor-square, W.*
1886		Provand, Andrew Dryburgh, 2, *Whitehall-court, S.W.*
1896		Pryor, Edward Thomas, 23, *Fore-street, E.C.*
1871	*c*	Puleston, Sir John Henry, 2, *Bank-buildings, Princes-street, E.C.*
1886		Pulley, Sir Joseph, Bart., *Lower Eaton, Hereford.*
1883		Rabbidge, Richard, F.C.A., 32, *Poultry, E.C.*
1872	*d p*	*Rabino, Joseph, *Chief Manager, Imperial Bank of Persia, Teheran.*
1888		*Radcliffe, Sir David, J.P., *Rosebank, Knowsley, Prescot.*
1858		*Radstock, The Right Hon. Lord, *Mayfield, Woolston, Southampton.*
1888	*d*	Rae, George, *Redcourt, Birkenhead.*
1885	*c d*	Rae, John, M.A., 37, *Werter-road, Putney, S.W.*

Year of Election.		
1900	p	Raffalovich, Alexis, 83, *Eaton-terrace, S.W.*
1887	d p	Raffalovich, His Excellency Arthur, 19, *Avenue Hoche, Paris.*
1897		Rai, Bihari Lal, F.R.S.L. (*Saugor, C.P., India*), *c/o W. Watson & Co.*, 7, *Waterloo-place, S.W.*
1860		Ramsay, Alexander Gillespie, F.I.A., *Canada Life Ass. Co., Hamilton, Canada, West.*
1885		Randell, James S., 19, *Alfred-street, Bath.*
1880	c	Rankin, Sir James, Bart., M.P., 35, *Ennismore-gardens, Prince's-gate, S.W.*
1897		Ranson, Albert, 32, *Westgate-street, Ipswich.*
1884		Raphael, Alfred, 34, *Warwick-road, Maida Vale, W.*
1878		Rathbone, William, *Greenbank, Liverpool, E.*
1884		*Ravenscroft, Francis, *Birkbeck Bank, Chancery-lane, W.C.*
1874	c d p	*Ravenstein, Ernest George, F.R.G.S., 2, *York-mansions, Battersea-park, S.W.*
1886		Rawlins, Frederick, *Southport, Queensland.*
1877		*Rawlins, Thomas, 45, *King William-street, E.C.*
1895		Rawlinson, Albert, 3/5, *Garstin's-place, Calcutta.*
1893		Rea, Charles Herbert Edmund, 223, *Norwood-road, Herne-hill, S.E.*
1889		*Reed, Thomas, F.C.A., 63, *King-street, South Shields.*
1898		Renwick, William George, 11, *Pembroke-terrace, Penge, S.E.*
1888	c d p	REW, ROBERT HENRY, 14, *Castletown-road, West Kensington, W.*
1886		Rhens, Robert, 102, *Greenwood-road, Hackney, N.E.*
1888		Rhodes, George Webber, 131, *Wool Exchange, E.C.*
1899		Rhodes, Thomas, 14, *St. Thomas's-mansions, Westminster Bdge., S.E.*
1895		Richards, Roger C. (*Inner Temple*), *Crayford House, Honor Oak-road, S.E.*
1896		Richards, Samuel Norman, 583, *Seven Sisters-road, Tottenham.*
1899		Richardson, George Henry, F.I.S., *Lily Bank*, 43, *Albany-rd., Chorlton-cum-Hardy.*
1895		Richardson, Sir Thomas, *Kirklevington Grange, Yarm, Yorks.*

Year of Election.		
1873		Ripon, The Most Hon. the Marquess of, K.G., F.R.S., &c., 9, *Chelsea Embankment, S.W.*
1898		Ritchie, Frank Baillie, *Burglary Insurance Security Co.*, 63, *St. James's-street, S.W.*
1892		Rivington, Francis Hansard, 44, *Connaught-square, W.*
1882		Roberts, Edward, F.R.A.S. (*Nautical Almanac Office*), 3, *Verulam-buildings, Gray's Inn, W.C.*
1894	*d p*	Robertson, James Barr, *National Liberal Club, S.W.*
1900		Robinson, James, *Clarendon House, Clayton-st. W., Newcastle-on-Tyne.*
1886	*d*	Roechling, Herman Alfred, A.M. Inst. C.E., 14, *Market-street, Leicester.*
1880		*Ronald, Byron L., 14, *Upper Phillimore-gardens, W.*
1873	*c*	*Rosebery, The Right Hon. the Earl of, LL.D., F.R.S., 38, *Berkeley-square, W.*
1892		Ross, Charles Edmonstone, F.S.A.A., *Royal Societies' Club, St. James's-street, S.W.*
1900		Ross, John Howlett (*Australian Financial Gazette*), *Queen-street, Melbourne, Victoria.*
1893	*d*	Rothwell, Richard Pennefather (*Editor, Engineering and Mining Journal*), 250, *West 139th-street, New York, U.S.A.*
1897		Rothwell, William Thomas, J.P., *Newton Heath, near Manchester.*
1899		Rowntree, Benjamin Seebohm, 32, *St. Mary's, York.*
1898	*d p*	Rozenraad, Cornelius, 4, *Moreton-gardens, Kensington, W.*
1890		Ruffer, Marc Armand, M.A., M.D., B.Sc., *Ramleh, Egypt.*
1888	*d*	Rusher, Edward Arthur, F.I.A., 142, *Holborn Bars, E.C.*
1886		Russell, Arthur B., A.C.A., 11, *Ludgate-hill, E.C.; and* 16, *Dartmouth Park-road, N.W.*
1878	*d*	Russell, Richard F., 8, *John-street, Adelphi, W.C.*
1873		Rutherford-Elliot, J. G., *Elphinstone, Tyndall's Park-road, Clifton, Bristol.*

Year of Election.		
1894	*d*	Sachs, Edwin Otho, 3, *Waterloo-place, Pall Mall, S.W.*
1873		*Salisbury, The Most Hon. the Marquess of, K.G., P.C., F.R.S., 20, *Arlington-street, W.*
1898	*d*	Salmon, Richard George, F.I.A., *Sun Life Ass. Soc., Threadneedle-st., E.C.*
1875	*d*	*Salomons, Sir David Lionel, Bart., J.P., *Broom-hill, Tunbridge Wells.*
1876		Salt, Sir Thomas, Bart., *Weeping Cross, Stafford.*
1892		Samuel, Charles, 176, *Sutherland-avenue, Harrow-road, W.*
1868	*c*	Samuelson, Sir Bernhard, Bart., F.R.S., 56, *Prince's-gate, Hyde-park, S.W.*
1899	*d*	Sanderson, Frank, M.A., *Canada Life Ass. Co., Toronto, Canada.*
1895		Sanger, Charles Percy, B.A., 453, *Strand, W.C.*
1891		*Sarda, Pandit Har Bilas, B.A., M.R.A.S., *Government College, Ajmere, India.*
1895		Satthianadhan, Professor S., M.A., *Presidency College, Madras, India.*
1886	*d p*	Sauerbeck, Augustus (*Helmuth Schwartz & Co.*), 3 & 4, *Moorgate-street-buildings, E.C.*
1893		Saunders, Cecil Roy, F.I. Inst., *Eling House, Eling, Hants.*
1852		Saunders, James Ebenezer, F.G.S., J.P., 4, *Coleman-street, E.C.*
1887		*Scarth, Leveson, M.A., *Elms Lea, Cleveland-walk, Bath.*
1883		Schidrowitz, Samuel,
1877		Schiff, Charles, 22, *Lowndes-square, S.W.*
1891	*d p*	*Schloss, David F., M.A., *Hill House, Wimbledon.*
1895		Schmidt, Hermann (*Deutsche Bank*), *Lombard House, George-yard, Lombard-st., E.C.*
1891		Schooling, John Holt, *Fotheringay House, Montpelier-row, Twickenham.*
1895		Schuurman, Willem H. A. Elink, *Noordeinde*, 79, *The Hague, Netherlands.*
1883		*Schwann, John Frederick, *Oakfield, Wimbledon; and* 6, *Moorgate-st., E.C.*

Year of Election.		
1900	*d*	Scott, Richard Clarkson, 21, *Water-street, Liverpool.*
1888		Scotter, Sir Charles, *Surbiton.*
1887	*c d*	Seaton, Edward, M.D. (Lond.), F.R.C.P., *The Limes, Clapham-common, S.W.*
1880		*Seeley, Sir Charles, Bart., *Sherwood Lodge, Nottingham.*
1899		Setchfield, George Beeby (*Refuge Ass. Co.*), *Beulah Kop*, 3, *Clarkson-street, Sheffield.*
1886	*d p*	Seyd, Ernest J. F., 38, *Lombard-street, E.C.*
1873	*d*	Seyd, Richard, 38, *Lombard-street, E.C.*
1894		Shaw, William Arthur, M.A., 3 *and* 4, *Lincoln's Inn-fields, W.C.*
1898		Shaw, William Napier, M.A., F.R.S., 10, *Moreton-gardens, South Kensington, W.*
1896	*p*	Sheppard, William Fleetwood, M.A., LL.M., *Board of Education, Whitehall, S.W.*
1898	*d*	Sherwell, Arthur, 38, *St. Mary's, York.*
1885		Sherwin, Joseph Henry, 7, *Whitehall-place, S.W.*
1888		Shillcock, Joshua, M.A., *Bank of England, West Branch, Burlington-gardens, W.*
1886		Silver, Stephen William, 3, *York-gate, Regent's-park, N.W.*
1878	*d*	Simmonds, G. Harvey, 1, *Whitehall, S.W.*
1892		*Sinclair, Captain John, M.P., 101, *Mount-street, Berkeley-square, W.*
1881	*d*	Skrine, Francis Henry B., J.P., 35, *Leckford-road, Oxford.*
1838		Slade, Alfred Thomas, *Wardrobe Chambers, Queen Victoria-street, E.C.*
1888		Slade, Francis William, 17, *Victoria-street, Westminster, S.W.*
1883		Sly, Richard Stevens, J.P., F.R.G.S., *Fern Villa, Queen's-road, New Cross Gate, S.E.*
1869	*d*	Smee, Alfred Hutcheson, M.R.C.S., *The Grange, Wallington, Surrey.*
1878		*Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst. C.E., *c/o Sir Henry Gilbert, Harpenden, St. Albans.*
1896		Smith, Edward, 75, *Gore-road, South Hackney, N.E.*
1871		Smith, E. Cozens, 1, *Old Broad-street, E.C.*

Year of Election.		
1878	d	*Smith, George, LL.D., C.I.E., *Serampore House, Napier-road, Edinburgh.*
1889	d	Smith, George Armitage, M.A., 3, *Albert-terrace, Regent's-park, N.W.*
1888	c d	Smith, H. Llewellyn, M.A., B.Sc., 4, *Harcourt-buildings, Temple, E.C.*
1877		Smith, Howard S., A.I.A., F.F.A., *Bank Chambers,* 14, *Waterloo-street, Birmingham.*
1891		Smith, James Parker, M.P., *Jordanhill, Partick, N.B.*
1877		Smith, John, 32, *Old Jewry, E.C.*
1883	c	Smith, Samuel, M.P., 11, *Delahay-street, Westminster; and Reform Club, S.W.*
1888		Smith, Walter J., *St. Bartholomew's Chmbs.,* 61, *W. Smithfield, E.C.*
1890		Smith, William Alexander, J.P., *Arpafeelie, Moorebank, N.S.W.*
1894		*Smith, The Hon. William Frederick Danvers, M.P., 3, *Grosvenor-place, S.W.*
1894		Smithers, Frederick Oldershaw, 171, *Adelaide-road, Hampstead, N.W.*
1900		*Somerville, Professor William, D.Sc., M.A., 3, *Adams-road, Cambridge.*
1899		Sorley, James, F.I.A., F.F.A., F.R.S.E., 32, *Onslow-square, S.W.*
1897		Southgate, Henry William, 33, *Springfield-place, Leeds.*
1895		Soward, Alfred Walter, 28, *Therapia-road, Honor Oak, S.E.*
1855	d	Sowray, John Russell,
1896		Sparrow, Frederick Syer, *c/o J. Woxfor,* 24, *Yonge-park, Seven Sisters-road, N.*
1889		Speirs, Edwin Robert (*General Life Ass. Co.*), 1, *Waterloo-place, S.W.*
1867		*Spencer, Robert James,
1892		Spender, John Alfred, M.A., 29, *Cheyne-walk, S.W.*
1897	d	Spensley, J. Calvert (*Stat. Dept., L.C.C.*), *Leighton Hall, Leighton-crescent, N.W.*
1883		Spicer, Albert, 50, *Upper Thames-street, E.C.*
1898		Spicer, Edward Samuel, 73, *Philbeach-gardens, S.W.; and Reform Club.*
1856	d	*Sprague, Thomas Bond, M.A., LL.D., F.I.A., 26, *St. Andrew-square, Edinburgh.*

Year of Election.		
1882		Stack, Thomas Neville (9, *Crosby-square, E.C.*), 70, *Gloucester-crescent, Regent's-park, N.W.*
1889	*d*	Stanton, Arthur G. (13, *Rood-lane, E.C.*), *Oakfield, Eliot-park, Blackheath, S.E.*
1880		Stark, James, *Reversionary Interest Soc.*, 30, *Coleman-st., E.C.*
1899		Stenberg, Ernst Gottfried, *Registrar-General's Office, Perth, W.A.*
1880		Stephens, William Davies, J.P. (Alderman), 2, *St. Thomas's-place, Newcastle-on-Tyne.*
1882		*Stern, Edward D., 4, *Carlton House-terrace, S.W.*
1885	*d*	Stevens, Marshall, 18, *Exchange-street, Manchester.*
1889		Stow, Harry Vane, *National Liberal Club, Whitehall-place, S.W.*
1872	*d*	Strachey, General Sir Richard, R.E., G.C.S.I., F.R.S., 69, *Lancaster-gate, W.*
1893		Strahan, Samuel Alexander Kenny, M.D.,
1883	*d*	*Strathcona and Mount Royal; The Right Hon. Lord, G.C.M.G. (*High Commissioner for Canada*), 17, *Victoria-street, S.W.*
1880		Strutt, Hon. Frederick, *Milford House, near Derby.*
1891		Stuart, Harold A., *Inspector-General of Police, Madras, India.*
1884		*Sugden, Richard, *The Farre Close, Brighouse, Yorkshire.*
1895		Sutherland, J. Francis, M.D., 4, *Murchiston-bank-avenue, Edinburgh.*
1899		Suzuki, Junichiro, 15, *Kitacho, Ushigome, Tokio.*
1900		Swetenham, Charles C., *c/o Grindlay Groom & Co., Bombay, India.*
1881		Sykes, George Samuel, 1, *Grant's-lane, Calcutta, India.*
1900		Sykes, John Frederick Joseph, M.D., D.Sc., 40, *Camden-square, N.W.*
1894	*d*	Tagliaferro, Napoleone, F.R.H.S., *Education Office, Malta.*
1889	*d*	Tattersall, William, *Melbrook, Bowdon, Cheshire.*

Year of Election.		
1889		Tayler, Stephen Seaward (Alderman), *Fairholme, Mt. Ephraim-rd., Streatham, S.W.*
1887	d	Taylor, R. Whately Cooke, *Regent Chmbrs.*, 121, *W. Regent-st., Glasgow.*
1888		*Taylor, Theodore Cooke, M.P., J.P., *Sunny Bank, Batley, Yorkshire.*
1898		Teasdale, William Alfred, 21, *Boston-street. Hulme, Manchester.*
1893		Teece, Richard, F.I.A., F.F.A., 87, *Pitt-street, Sydney, N.S.W.*
1884		Tempany, Thomas William, F.R.H.S., 25, *Bedford-row, W.C.*
1888	d	Temperley, William Angus, junr., 2, *St. Nicholas-buildings, Newcastle-on-Tyne.*
1888		Theobald, John Wilson, 85, *Palmerston-buildings, E.C.*
1889		Thodey, William Henry, 479, *Collins-street, Melbourne, Victoria.*
1888	d	Thomas, David Alfred, M.P., *Llanwern, near Newport, Mon.*
1899		Thomas, Henry, *Queen's-chambers, Neath, South Wales.*
1887		Thomas, John Collette, *Trewince, Portscatho, Cornwall.*
1896	d	Thomas, John Tubb. L.R.C.P. & S. (Edin.), D.P.H., *Pevensey House, Trowbridge, Wilts.*
1879	d	Thomas, W. Cave, 47, *Russell-road, W.*
1864		*Thompson, Henry Yates, 19, *Portman-square, W.*
1895		Thomson, David Couper, J.P., *Dundee Courier Office, Dundee.*
1882		Tinker, James, *Hordlecliff, Lymington, Hants.*
1889		Touch, George Alexander, *Eaton Tower, Caterham Valley, Surrey.*
1899		Tozer, William Henry, 28, *Abingdon-street. Westminster, S.W.*
1868		*Treatt, Frank Burford, J.P., *Court House, Hillston, New South Wales.*
1900		Trenerry, Charles Farley, A.I.A., 56, *Rua d'Ouvidor*, 971, *Caixa do Correio, Rio de Janeiro, Brazil.*
1868		Tritton, Joseph Herbert, 54, *Lombard-street, E.C.*
1892		Trobridge, Arthur, 13, *Fairlawn-park, Chiswick, W.*
1899		Turnbull, Robert Edward, 2, *Prince of Wales-terrace, Scarborough.*

Year of Election.		
1890		*Turner, Rev. Harward, M.D. (Paris), B.Sc., F.R.M.S.,
1885		Turner, William, *c/o The Librarian, Free Public Library, Trinity-street, Cardiff.*
1892		Tyler, Edgar Alfred, 20, *Bucklersbury, E.C.*
1841		Tyndall, William Henry, F.I.A., *Morlands, Oxford-road, Redhill.*
1893		Tyrer, Thomas, F.I.C., F.C.S., *Stirling Chemical Works, Stratford, E.*
1877	*c d p*	*Urlin, Richard Denny, 22, *Stafford-terrace, Phillimore-gardens, W.*
1888		Van Raalte, Marcus, 22, *Austin Friars, E.C.*
1890	*d p*	Venn, John, D.Sc., F.R.S., 8, *Hardwick-road, Eastbourne.*
1889		*Venning, Charles Harrison, 33, *Old Broad-street, E.C.*
1888		Verdin, William Henry, J.P., *Winsford, Cheshire.*
1897	*d*	Verney, Sir Edmund, Bart., F.R.G.S., F.R.M.S., *Claydon House, Winslow, Bucks.*
1891		Verney, Frederick William, 6, *Onslow-gardens, S.W.*
1886	*c*	Verulam, The Right Hon. the Earl of, *Sopwell, St. Albans.*
1876		Vigers, Robert, 4, *Frederick's-place, Old Jewry, E.C.*
1885		Vincent, Frederick James, A.I.A. (*London, Glasgow, and Edinburgh Assurance Co.*), 26 & 27, *Farringdon-street, E.C.*
1877	*d*	Vine, Sir John Richard Somers, C.M.G., *Imperial Institute, S.W.*

Year of Election.		
1900		Walford, Adolphus Augustus Beddall, 4, *Lothbury, E.C.*
1890	*d*	Walford, Ernest L., 2, *Shorter's-court, E.C.*
1900		Wall, Arthur Eccles, 45, *Dale-street, Liverpool.*
1868		Wallis, Charles James, 14, *Russell-square, W.C.*
1880	*d*	Wallis, E. White, 76, *Carlton-hill, N.W.*
1897		Walton, J. Herbert, *St. Ronan's, Teddington.*
1900	*d*	Wamsley, Arthur Wilson, *Royal Exchange Ass. Co., Royal Exchange, E.C.*
1899		Ward, Joseph Frederick, 41, *Main-street, Port Elizabeth.*
1893		Ward, William Cullen, F.S.I.A., 17, *O'Connell-street, Sydney, N.S.W.*
1888		Warren, Reginald Augustus, J.P., *Preston-place, near Worthing.*
1900		Warren-Jones, A., *Bombay, Baroda and C.I. Railway Co., Bombay.*
1888		Wartnaby, William Wade, *Market Harborough, Leicestershire.*
1865		Waterhouse, Edwin, B.A., A.I.A., F.C.A., 3, *Frederick-place, Old Jewry.*
1886		Waters, Alfred Charles, *General Register Office, Somerset House, C. W.*
1892		Wates, Charles Marshall, 47, *Westbere-road, West Hampstead, N.W.*
1883		Watson, William Livingstone, *Reform Club Chambers*, 105, *Pall Mall, S.W.*
1885	*d*	*Watt, William, 17, *Queen's-road, Aberdeen.*
1888		Webb, Henry Barlow, *Holmdale, Dorking.*
1893	*d*	Weedon, Thornhill, *Bryn-Mawr, Woolloongabba, Brisbane.*
1873	*c*	*Welby, The Right Hon. Lord, G.C.B., 11, *Stratton-street, Piccadilly, W.*
1874		Welch, Charles, F.S.A., *Guildhall, E.C. (Representing the Library Committee of the Corporation of the City of London.)*
1900		Weldon, Francis Seymour, *Sarandi, East Molesey.*

Year of Election.		
1889		Wells-Smith, Henry, A.C.A., *Kingsley House, Worksop, Notts.*
1855	*c d p*	Welton, Thomas Abercrombie, F.C.A., 22, *Palace-road, Streatham-hill, S.W.*
1879		Wenley, James Adams, *Bank of Scotland, Bank-street, Edinburgh.*
1879		*Westlake, John, Q.C., LL.D., *The River House*, 3. *Chelsea Embankment.*
1882		*Whadcoat, John Henry, F.C.A., *Poole, Dorset.*
1883		*Whadcoat, William Edward, 54, *Carleton-road, Tufnell-park, N.*
1878		Wharton, James, *Edgehill, Netherhall-gds., FitzJohn's-av., N.W.*
1887		Whinney, Frederick, 8, *Old Jewry, E.C.*
1859		Whitbread, Samuel, *Southill-park, Biggleswade, Beds.*
1887		*White, The Rev. George Cecil, M.A., *Nursling Rectory, Southampton.*
1863		White, Leedham, 16, *Wetherby-gardens, South Kensington, S.W.*
1888	*d*	Whitehead, Sir James, Bart., J.P., D.L. (Alderman), *Wilmington Manor, near Dartford.*
1895	*d*	Whitehead, The Hon. Thomas Henderson, M.L.C., *Chartered Bank of India, &c., Hong Kong.*
1892	*d*	Whitelegge, B. Arthur, M.D., 3. *Edwardes-place, Kensington, W.*
1881	*d*	Whiteley, William, 31. *Porchester-terrace, Hyde-park, W.*
1895		Whittuck, Edward Arthur, M.A., B.C.L., 77. *South Audley-street, W.*
1879		*Whitwill, Mark, J.P., *Bristol.*
1899		Wiener, Isidore, 3, *Harcourt-buildings, Temple, E.C.*
1891		Wigham, Matthew Thomas, A.S.A.A., 34 *and* 36. *Gresham-street, E.C.*
1884		Wightman, Charles, 1, *Fenchurch-avenue, E.C.*
1895		Wilenkin, Gregory, 7. *Wetherby-gardens, South Kensington, S.W.*
1893	*p*	Wilkinson, Rev. John Frome, M.A., *Barley Rectory, Royston, Herts.*
1875		Wilkinson, Thomas Read, *Vale Bank, Knutsford, Cheshire.*
1860		Willans, John Wrigley, *Armathwaite, Teignmouth-road, Torquay.*
1896		*Williams, Major Charles Woolmer, *City Carlton Club, E.C.*

Year of Election.		
1897		Williams, Daniel Thomas, *P.O., Blaenclydach, Llynypia, R.S.O., Glam.*
1894		Williams, Edward Frederick, *Joint Stock Bank, Halifax.*
1897		*Williams, Ernest E., *Egmont Lodge, Church-row. Old Fulham, S.W.*
1864		Williams, Frederick Bessant, F.S.A. (Scot.), 19, *Haymarket, S.W.*
1895		Williams, Harry Mallam, F.S.A. (Scot.), *Tilehurst, Priory-park, Kew.*
1888		*Williams, Robert, M.P., 20, *Birchin-lane, E.C.*
1895		*Willis, J. G., B.A., *Board of Trade, Whitehall-gardens, S.W.*
1900		Willoughby, William F., *Department of Labor, Washington, D.C., U.S.A.*
1898		Wilson, Alexander Johnstone, *Annandale, Atkin's-road, Clapham-park, S.W.*
1891		Wilson, Henry Joseph, M.P., *Osgathorpe Hills, Sheffield.*
1898		Wilson, Henry Wrigley, 144, *Elgin-avenue, W.*
1884		Wilson, James (*Settlement Commissioner*), *Lahore, Punjab, India.*
1874	*d*	*Wilson, Robert Porter, 5, *Cumberland-terrace, Regent's-park, N.W.*
1900		Wines, Frederick H., M.D., *Census Office, Washington, D.C., U.S.A.*
1900		Wolfe, S. Herbert, 11, *Broadway, New York City, U.S.A.*
1900		Wolfenden, Henry, 1, *Palace-court, Hyde-park, W.*
1897	*d p*	Wood, George Henry, 31, *Queen-street, Eastville, Bristol.*
1897		Woodd, Basil Aubrey Hollond. 35, *Tite-street, Chelsea, S.W.*
1887		Woodhouse, Coventry Archer, 30, *Mincing-lane, E.C.*
1890		Woollcombe, Robert Lloyd, LL.D., F.I. Inst., &c., 14, *Waterloo-road, Dublin.*
1890		Worrall, Charles, *Colonial Mutual Life Office, Adderley-street, Cape Town.*
1895		Worsfold, Edward Mowll, *Market Square, Dover.*
1878		Worsfold, Rev. John Napper, M.A., *Haddlesey Rectory, near Selby, Yorks.*
1887		Worthington, A. W., B.A., *Old Swinford, Stourbridge.*

Year of Election.		
1895		Yanagisawa, Count Yasutoshi, 1, *Shiba Yamachi*, 8, *Chôme*, *Tokio*, *Japan.*
1886	*c p*	Yerburgh, Robert Armstrong, M.P., 25, *Kensington Gore*, *S.W.*
1900		Yerbury, John Edwin, *The Settlement*, *Tavistock-place*, *W.C.*
1888		*Yglesias, Miguel, 2, *Tokenhouse-buildings*, *E.C.*
1877		*Youll, John Gibson, *Jesmond-road*, *Newcastle-on-Tyne.*
1897		Young, Norwood Crichton, 17, *Avenue-road*, *Regent's-park*, *N.W.*
1898		Young, Sydney, *The Corn Exchange*, *Mark-lane*, *E.C.*
1895	*c d p*	YULE, GEORGE UDNY, *City & Guilds Institute*, *Exhibition-road*, *S.W.*; *and* 43, *Heathhurst-rd.*, *Hampstead*, *N.W.*

⁂ *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* ASSISTANT SECRETARY, *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY FELLOWS.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,
Honorary President.

Year of Election.

Argentine Republic.

1890 *d* DR. FRANCISCO LATZINA, **Calle Maipu, 982, Buenos Ayres.**

Director General of Statistics; Doctor *honoris causa* of the Faculty of Physical and Mathematical Sciences of the University of Cordoba; Knight of the Italian Order of S.S. Maurice and Lazare; Officer of the Academy of France; Member of the National Academy of Sciences, of the International Statistical Institute, of the Geographical and Statistical Societies of Paris, of the Society of Commercial Geography of Paris, and Corresponding Member of the National Historical Academy of Venezuela.

Austria-Hungary.

1890 *d* DR. KARL THEODOR VON INAMA-STERNEGG, **Vienna.**

Doctor of Political Economy; Member of the Austrian House of Lords; President of the Imperial and Royal Central Statistical Commission; Professor at the University of Vienna; Member of the International Statistical Institute.

1893 *d* DR. JOSEPH DE JEKELFALUSSY, **Budapest.**

Doctor *Juris;* Advocate; Chief of the Royal Hungarian Statistical Bureau; Ministerial Councillor; Knight of the Order of Francis Joseph; Second Vice-President of the Royal Hungarian Statistical Council; External Member of the Committee of Examiners for Political Sciences; Corresponding Member of the Hungarian Academy of Sciences; Member of the International Statistical Institute.

1893 *d* DR. FRANZ RITTER VON JURASCHEK, **Kärnthnerstrasse, 55, Vienna.**

Doctor *Juris et Philosophiæ;* "K.K. Regierungsrath;" Member and Secretary of the Imperial and Royal Central Statistical Commission; Professor at the University of Vienna; Professor of Public Law and of Statistics at the Military Academies, Vienna; Knight of the Austrian Order of the Iron Crown (3rd Class); Officer of the Order of the Crown of Italy; Member of the Permanent Commission for Commercial Values; of the International Statistical Institute; and of the British Economic Association.

Year of Election

Austria-Hungary—*Contd.*

1893 *d p* JOSEPH KÖRÖSI, **Budapest.**
Director of the Municipal Statistical Bureau of Budapest; *Docent* at the University of Budapest; President of the Municipal Statistical Committee; Knight of Several Orders; Member of the Statistical Commissions of Hungary, Belgium, and Nijni-Novgorod; Honorary Member of the American Statistical Associations; Member of the Hungarian Academy of Science, of the International Statistical Institute, of the Statistical Societies of Manchester and Paris, of the British Economic Association, and of several other learned Societies.

China.

1890 *d* SIR ROBERT HART, Baronet, G.C.M.G., LL.D., **Peking.**
Inspector-General of Imperial Maritime Customs, China.

Denmark.

1878 *d* VIGAND ANDREAS FALBE-HANSEN, **Copenhagen**
Professor of Political Economy at the University of Copenhagen.

1900 *d p* MARCUS RUBIN, **Vendersgade 25a, Copenhagen.**
Knight of the Order of the "Danebrog"; Director of the Statistical Bureau of the State; Member of the Board of the Danish Society of Political Economy and of the Board of the Danish Society of History; Member of the International Statistical Institute.

1852 *d* DR. PETER ANTON SCHLEISNER, **Frederiksberg, Copenhagen.**
Doctor of Medicine, State Councillor; Knight and Bachelor of the Order of the "Danebrog," and Knight of the Swedish Order of the North Star; President of the Royal Danish Institute of Vaccination; Member of the Royal Danish General Board of Health.

France.

1880 *d p* DR. JACQUES BERTILLON, **1, Avenue Victoria, Paris.**
Doctor of Medicine; Chief of the Statistical Department of the City of Paris; Member of the Superior Council of Statistics; of the Consultative Committee of Public Hygiene of France; of the Statistical Society of Paris; and of the International Statistical Institute, &c.

France—*Contd.*

Year of Election		
1856	*d*	MAURICE BLOCK, **63, Rue de l'Assomption, Paris.** Knight of the Legion of Honour, and of Orders of Sweden, Russia, Prussia, Bavaria, Austria-Hungary, Greece, Italy, and Portugal; Member of the Institute of France, of the Superior Council of Statistics, of the International Statistical Institute, of the Society of Political Economy of Paris, and of many Academies and Scientific Societies.
1879	*d*	DR. ARTHUR CHERVIN, **82, Avenue Victor Hugo, Paris.** Doctor of Medicine and Surgery; Director of the Paris Institute for Stammerers; Member of the Superior Council of Statistics and of the International Statistical Institute, &c.
1897	*d*	JEAN JACQUES ÉMILE CHEYSSON, **4, Rue Adolphe Yvon, Paris.** Inspector-General of Bridges and Highways; Member of the International Statistical Institute; Past President of the Statistical Society of Paris; late Director of the Creusot Iron Works, of Machinery at the Paris Exhibition of 1867, and of Graphic Statistics for the Ministry of Public Works.
1878	*d*	MAXIMIN DELOCHE, **5, Rue Herschel, Paris.** Honorary Director of the General Statistics of France; Commander of the Legion of Honour; Officer of the Order of Public Instruction; Commander of the Austrian Order of Francis Joseph; Member of the Institute of France, and of several learned Societies.
1890	*d p*	ALFRED DE FOVILLE, **3, Rue du Regard, Paris.** Master of the Mint; Professor at the National Conservatoire of Arts and Trades (Chair of Industrial Economy and Statistics); Officer of the Legion of Honour; Member of the Institute of France; Past President of the Statistical Society of Paris; Member of the International Statistical Institute and of the Superior Council of Statistics.
1870	*d*	DR. CLÉMENT JUGLAR, **167, Rue St. Jacques, Paris.** Member of the Institute of France; Past President of the Statistical Society of Paris; Vice-President of the Society of Political Economy of Paris; Member of the International Statistical Institute.
1860	*d p*	PIERRE ÉMILE LEVASSEUR, **26, Rue Monsieur le Prince, Paris.** Member of the Institute of France; Professor at the College of France and at the Conservatoire of Arts and Trades; President of the Statistical Commission for Primary Instruction; Past President of the Statistical Society of Paris; Vice-President of the International Statistical Institute, of the Superior Council of Statistics, and of the Society of Political Economy, &c.
1887		DANIEL WILSON, **2, Avenue d'Jéna, Paris.** Deputy; Ex-Under-Secretary of State; Past President of the Statistical Society of Paris.

Year of Election

France—*Contd.*

1876 *d* THE PRESIDENT (for the time being) OF THE STATISTICAL SOCIETY OF PARIS, **28, Rue Danton, Paris.**

Germany.

1890 *d* KARL JULIUS EMIL BLENCK, **Lindenstrasse, 28, Berlin, S.W.**

"Geheimer Ober-Regierungsrath;" Director of the Royal Statistical Bureau of Prussia, also Member of the Prussian Central Statistical Commission and of the Central Board of Control of the Survey of Prussia; Member of the International Statistical Institute; Honorary Member or Member of several learned Societies.

1895 *d* DR. CARL VICTOR BÖHMERT, **Hospitalstrasse, 4, Dresden.**

"Geheimer Regierungsrath;" Doctor *Juris;* Late Director of the Statistical Bureau of Saxony; Professor of Political Economy and Statistics in the Polytechnical High School of Dresden; Member of the International Statistical Institute.

1877 *d* DR. GEORG VON MAYR, **Georgenstrasse, 38, Munich.**

Ex-Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; formerly Director of the Royal Statistical Bureau of Bavaria; Honorary Member of the International Statistical Institute; Ordinary Professor of Statistics, Finances, and Political Economy at the University of Munich; Associate of the Statistical Society of Paris.

1893 *d* DR. FRIEDRICH WILHELM HANS VON SCHEEL, **Lützow-Ufer, 6/8, Berlin, W.**

"Kaiserlicher Geheimer Regierungsrath;" Doctor *Juris et philosophiæ;* Director of the Imperial Statistical Bureau of the German Empire; formerly Professor of Political Economy and Statistics at the University of Bern; Honorary Member of the Statistical and Social Inquiry Society of Ireland; Member of the International Statistical Institute.

1860 DR. GEORG KARL LEOPOLD SEUFFERT, **Maximiliansplatz, Nr. 9/3, Munich.**

Formerly Chief Inspector and Director of the Royal Custom-House at Simbach; Knight of the Bavarian Order of St. Michael 1st Class; Corresponding Member of the Central Statistical Commission of Belgium; Member of the "Freies Deutsches Hochstift zu Frankfurt a/M."

Year of Election.

Germany—*Contd.*

1897 DR. ADOLPH WAGNER, Ph.D., **51, Lessingstrasse, Berlin, N.W.**

Professor of Political Economy at the University of Berlin; Member of the Statistical Bureau of Prussia, and of the International Statistical Institute.

1876 *d* THE PRESIDENT (for the time being) OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY OF FRANKFORT, **Stadtbibliothek, Frankfort.**

Italy.

1879 *d* DR. GEROLAMO BOCCARDO, **Piazzia Santi Apostoli, 74, Rome.**

Senator; Councillor of State; Doctor of Laws; late Professor at the University and at the Superior Naval School of Genoa; Grand Officer of the Orders of SS. Maurice and Lazare, and of the Crown of Italy; Knight of the Order of Civil Merit of Savoy; Member of the Academy "dei Lincei," of the Academy of Naples, of the Institutes of Science of Milan, Venice, and Palermo, of the Cobden Club, of the International Statistical Institute, of the Academy of Madrid, and of the Deputation of National History, &c.

1874 *d* DR. LUIGI BODIO, **193, Via Torino, Rome.**

Doctor of Laws; Professor of Industrial Legislation and of Statistics at the Engineering College, Rome; Councillor of State; President of the Royal Board of Statistics of the Kingdom of Italy; Secretary of the International Statistical Institute; Grand Officer of the Order of SS. Maurice and Lazare; Knight of the Order of Civil Merit of Savoy; Correspondent of the Institute of France (Academy of Moral and Political Sciences).

1899 *d* DR. CARLO FRANCESCO FERRARIS, **Padua.**

Professor of Administrative Science and Law, and of Statistics at the Royal University of Padua; Member of the Superior Council of Statistics and of the Superior Council of Public Education of Italy; Member of the Academy "dei Lincei," of the Royal Institute of Science at Venice, of the International Statistical Institute, and Honorary Member of the Swiss Statistical Society; Ex-Member of the Italian Parliament.

1880 *d* ANGELO MESSEDAGLIA, **Rome.**

Senator; Professor of Statistics at the Royal University of Rome; Member of the Academy "dei Lincei"; Knight of the Order of Civil Merit of Savoy: Member of the International Statistical Institute; President of the Commission for Judicial Statistics.

Year of Election.

Mexico.

1895 *d* DON MANUEL FERNANDEZ LEAL, **Mexico.**
Secretary of State, Department of "Fomento," Colonization and Industry.

Netherlands.

1896 *d* DR. NICOLAAS GERARD PIERSON, **The Hague.**
Minister of Finance; Late President of the Netherlands' Bank; Late Professor of Political Economy at the University of Amsterdam; Member of the International Statistical Institute.

Roumania.

1896 *d* GRÉGOIRE P. OLANESCO, **Rue Grivitza 36, Bucharest.**
Late Director-General of Customs; Late General Secretary, Ministry of Finance; Officer of the Legion of Honor Member of the International Statistical Institute.

Russia.

1873 *d* HIS EXCELLENCY PIERRE SEMENOV, **St. Petersburg.**
Senator; Privy Councillor to His Imperial Majesty; President of the Imperial Statistical Council; President of the Imperial Geographical Society; Honorary Member of the Academy of Sciences in St. Petersburg; Associate of the Statistical Society of Paris.

1890 *d* HIS EXCELLENCY NICOLAS TROÏNITSKY, **Kovenskoy-pereoulok, Nr 9, St. Petersburg.**
Former Governor; Privy Councillor; Director of the Central Statistical Committee of the Ministry of the Interior; Life Member of the Statistical Council, of the Imperial Geographical Society of Russia, and of the International Statistical Institute, and Member of the Statistical Society of Paris.

Spain.

1845 HIS EXCELLENCY SEÑOR DON JOSÉ MAGAZ Y JAYME, **Calle de Leon, 13, Madrid.**
Advocate, Gentleman of His Majesty's Chamber, and Member of the Council of State; Ex-Deputy of the Cortes; Ex-Senator; Ex-Director-General of Treasury; Ex-Under-Secretary of the Ministry of Finance; Grand Cross of the Order of Isabella Catolica; Commander of the Order of Carlos 3º.

Year of Election.

Sweden and Norway.

1858 *d* DR. THORKIL HALVORSEN ASCHEHOUG, **41, Josephinegade Christiania.**

Doctor of Laws; Professor of Political Economy at the University of Christiania; Assessor Extraordinary of the Supreme Court of Norway; Commander of the First Class of the Norwegian Order of St. Olave, of the Swedish Order of the North Star; and of the Danish Order of the "Dannebroge;" Corresponding Member of the Institute of France; Member of the Institute of International Law, of the International Statistical Institute, and of the Academies of Christiania, Stockholm, Trondhjem and Upsala, also of the Royal Historical Society of Denmark.

1874 *d* ANDERS NICOLAI KIÆR, **Christiania.**

Director of the Central Statistical Bureau of Norway; Associate of the Statistical Society of Paris; Member of the International Statistical Institute.

1890 *d* DR. ELIS SIDENBLADH., Ph.D., **Stockholm.**

Director in Chief of the Central Statistical Bureau of Sweden; President of the Royal Statistical Commission; Commander, Officer, and Knight of several Swedish and Foreign Orders; Member of the Royal Academies of Sciences and of Agriculture, at Stockholm, of the International Statistical Institute, and Honorary and Corresponding Member of several foreign learned Societies.

Switzerland.

1890 *d* DR. LOUIS GUILLAUME, **Bern.**

Doctor of Medicine; Director of the Federal Statistical Bureau; Secretary of the International Penitentiary Commission; Member of the International Statistical Institute.

United States.

1873 THE HON. WILLIAM BARNES, **Thurlow-terrace, Albany, N.Y.**

Lawyer; Ex-Superintendent of the Insurance Department, State of New York.

1881 *d* DR. JOHN SHAW BILLINGS, **New York Public Library, New York City.**

M.A., M.D., LL.D., Edinburgh and Harvard; D.C L., Oxon; Surgeon, U.S. Army; Member of the National Academy of Sciences, of the International Statistical Institute, &c.

1896 *d* WORTHINGTON CHAUNCEY FORD, **Haddon Hall, Commonwealth Avenue, Boston, Mass.**

Late Chief of the Bureau of Statistics, Treasury Department; Chief of the Bureau of Statistics, Department of State; Member of the International Statistical Institute.

Year of Election.

United States—*Contd.*

1890 *d* DR. RICHMOND MAYO-SMITH, M.A., Ph.D., **Columbia College, New York.**

Professor of Political Economy and Social Science in Columbia College; Vice-President of the American Statistical Association; Member of the International Statistical Institute, and of the National Academy of Sciences.

1870 THE HON. JOHN ELIOT SANFORD, **Taunton, Mass.**

Lawyer; Ex-Speaker of the House of Representatives; Ex-Insurance Commissioner; Ex-Chairman of the Board of Harbour and Land Commissioners; Chairman of the Board of Railroad Commissioners.

1893 *d* THE HON. CARROLL DAVIDSON WRIGHT, M.A., LL.D., **Washington.**

Commissioner of the U.S. Department of Labour; late Chief of the Massachusetts Bureau of Statistics of Labour; President of the Association for the promotion of Profit Sharing; late President and now Vice-President of the American Social Science Association; President of the American Statistical Association; Member of the American and British Economic Associations, of the International Statistical Institute; Hon. Member of the Russian Imperial Academy of Sciences; Corresponding Member of the Institute of France; and Member of several other learned Societies.

1877 *d* DR. EDWARD YOUNG, M.A., Ph.D., **207, Maryland Avenue, N.E., Washington, U.S.A.**

Late Consul of the United States; formerly Chief of the Bureau of Statistics, United States of America; Member of the Geographical Society of Paris.

India.

1886 *d* JAMES EDWARD O'CONOR, C.I.E., **Calcutta and Simla.**

Director-General of Statistics; Assistant Secretary with the Supreme Government, India, Department of Finance and Commerce; Member of the International Statistical Institute.

Dominion of Canada.

1894 *d* GEORGE JOHNSON, **Ottawa.**

Statistician, Department of Agriculture, Ottawa, Canada.

New South Wales.

1893 *d p* TIMOTHY AUGUSTINE COGHLAN, **Sydney.**

Government Statistician of New South Wales; Member of the Public Science Board; formerly Registrar of Friendly Societies and Trade Unions; and Assistant Engineer for Harbours and Rivers.

Year of Election.

New Zealand.

1876 *d* SIR JAMES HECTOR, K.C.M.G., M.D., F.R.S.S. L. and E., F.G.S., &c., **Wellington.**
Director of the Geological Survey, of the Meteorological Department, and of the New Zealand Institute, &c.

Tasmania.

1894 *d* ROBERT MACKENZIE JOHNSTON, **Hobart.**
Registrar-General and Government Statistician; Fellow and Member of Council of the Royal Society of Tasmania; Member of Council and of Senate of the University of Tasmania; Fellow and Past President of Section F (*Economics* and *Statistics*) of the Australasian Association for the Advancement of Science; Fellow of the Royal Geographical Society of Australia; Honorary Foreign Corresponding Member of the Geological Society of Edinburgh; Fellow of the Linnean Society of London.

1876 *d p* EDWIN CRADOCK NOWELL, J.P., **Hobart.**
Clerk of Executive and Legislative Councils of Tasmania; late Government Statistician; Clerk to the Federal Council of Australasia in its four Sessions.

Victoria.

1858 *d* WILLIAM HENRY ARCHER, K.C.P., K.S.G., F.I.A., F.L.S., &c., **Grace Park, Hawthorne, Melbourne.**
Barrister-at-Law.

Great Britain and Ireland.

1876 *d* THE PRESIDENT (for the time being) OF THE MANCHESTER STATISTICAL SOCIETY, **63, Brown Street, Manchester.**

1876 *d* THE PRESIDENT (for the time being) OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND, **35, Molesworth Street, Dublin.**

NOTE.—The Executive Committee request that any inaccuracies in the foregoing List of HONORARY FELLOWS may be pointed out, and that all changes of address may be notified to the Assistant Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

ROYAL STATISTICAL SOCIETY.

Copy of Charter.

Victoria, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

To all to whom these Presents shall come, Greeting:—

Whereas Our Right trusty and entirely beloved cousin, Henry, Third Marquess of Lansdowne, Knight of the Most Noble Order of the Garter, Charles Babbage, Fellow of the Royal Society, John Elliott Drinkwater, Master of Arts, Henry Hallam, Fellow of the Royal Society, the Reverend Richard Jones, Master of Arts, and others of Our loving subjects, did, in the year One thousand eight hundred and thirty-four, establish a Society to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method, and the same Society is now called or known by the name of "The "Statistical Society."

And Whereas it has been represented to Us that the same Society has, since its establishment, sedulously pursued such its proposed objects, and by its publications (including those of its transactions), and by promoting the discussion of legislative and other public measures from the statistical point of view, has greatly contributed to the progress of statistical and economical science.

And Whereas distinguished individuals in foreign countries, as well as many eminent British subjects, have availed themselves of the facilities offered by the same Society for communicating important information largely extending statistical knowledge; and the general interest now felt in Statistics has been greatly promoted and fostered by this Society.

And Whereas the same Society has, in aid of its objects, collected a large and valuable library of scientific works and charts, to which fresh accessions are constantly made; and the said Society has hitherto been supported by annual and other subscriptions and contributions to its funds, and has lately acquired leasehold premises in which the business of the said Society is carried on.

And Whereas in order to secure the property of the said Society, to extend its operations, and to give it its due position among the Scientific Institutions of Our kingdom, We have been besought to grant to Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and to those who now are Members of the said Society, or who shall from time to time be elected Fellows of the Royal Statistical Society hereby incorporated, Our Royal Charter of Incorporation for the purposes aforesaid.

1. **Now Know Ye** that We, being desirous of encouraging a design so laudable and salutary, of Our especial grace, certain knowledge and mere motion, have willed, granted, and declared and Do by these Presents, for Us, Our heirs and successors, will, grant, and declare that the said Sir Rawson William Rawson, Knight Commander of the Most Distinguished Order of St. Michael and St. George, and Companion of the Most Honourable Order of the Bath, and such other of Our loving subjects as now are Members of the said Society, or shall from time to time be elected Fellows of "The Royal Statistical Society" hereby incorporated according to such regulations or bye laws as shall be hereafter framed or enacted, and their successors, shall for ever hereafter be by virtue of these presents one body politic and corporate, by the name of "**The Royal Statistical Society,**" and for the purposes aforesaid, and by the name aforesaid, shall have perpetual succession and a common seal, with full power and authority to alter, vary, break, and renew the same at their discretion, and by the same name to sue and be sued, implead and be impleaded, answer and be answered, unto and in every Court of Us, Our heirs and successors.

2. **The** Royal Statistical Society, in this Charter hereinafter called "The Society," may, notwithstanding the statutes of mortmain, take, purchase, hold and enjoy to them and their successors a hall, or house, and any such messuages or hereditaments of any tenure as may be necessary, for carrying out the purposes of the Society, but so that the yearly value thereof to be computed at the rack rent which might be gotten for the same at the time of the purchase or other acquisition, and including the site of the said hall, or house, do not exceed in the whole the sum of Two thousand pounds.

3. **There** shall be a Council of the Society, and the said Council and General Meetings of the Fellows to be held in accordance with this Our Charter shall, subject to the provisions of this Our Charter, have the entire management and direction of the concerns of the Society.

4. **There** shall be a President, Vice-Presidents, a Treasurer or Treasurers, and a Secretary or Secretaries of the Society. The Council shall consist of the President, Vice-Presidents, and not

less than twenty Councillors; and the Treasurer or Treasurers and the Secretary or Secretaries if honorary.

5. **The** several persons who were elected to be the President, Vice-Presidents, and Members of the Council of the Statistical Society at the Annual Meeting held in the month of June, One thousand eight hundred and eighty-six, shall form the first Council of the Society, and shall continue in office until the first Election of officers is made under these presents as hereinafter provided.

6. **General** Meetings of the Fellows of the Society may be held from time to time, and at least one General Meeting shall be held in each year. Every General Meeting may be adjourned, subject to the provisions of the Bye Laws. The following business may be transacted by a General Meeting, viz.:—

(*a*.) The Election of the President, Vice-Presidents, Treasurer or Treasurers, Secretary or Secretaries, and other Members of the Council of the Society.

(*b*.) The making, repeal, or amendment of Bye Laws.

(*c*.) The passing of any proper resolution respecting the affairs of the Society.

7. **Bye Laws** of the Society may be made for the following purposes, and subject to the following conditions, viz.:—

(*a*.) For prescribing the qualification and condition of tenure of office of the President; the number, qualifications, functions, and conditions of tenure of office of the Vice-Presidents, Treasurers, Secretaries, and Members of Council, and Officers of the Society; for making regulations with respect to General Meetings and Meetings of the Council and proceedings thereat, and for the election of any persons to be Honorary Fellows or Associates of the Society, and defining their privileges (but such persons, if elected, shall not be Members of the Corporation), and for making regulations respecting the making, repeal and amendment of Bye Laws, and generally for the government of the Society and the management of its property and affairs.

(*b*.) The first Bye Laws shall be made at the first General Meeting to be held under these presents, and shall (amongst other things) prescribe the time for holding the first election of officers under these presents.

8. **The** General Meetings and adjourned General Meetings of the Society shall take place (subject to the rules or bye laws of the Society, and to any power of convening or demanding a

Special General Meeting thereby given) at such times and places as may be fixed by the Council.

9. **The** existing rules of the Statistical Society, so far as not inconsistent with these presents, shall be in force as the Bye Laws of the Society until the first Bye Laws to be made under these presents shall come into operation.

10. **Subject** to these presents and the Bye Laws of the Society for the time being, the Council shall have the sole management of the income, funds, and property of the Society, and may manage and superintend all other affairs of the Society, and appoint and dismiss at their pleasure all salaried and other officers, attendants, and servants as they may think fit, and may do all such things as shall appear to them necessary or expedient for giving effect to the objects of the Society.

11. **The** Council shall once in every year present to a General Meeting a report of the proceedings of the Society, together with a statement of the receipts and expenditure, and of the financial position of the Society, and every Fellow of the Society may, at reasonable times to be fixed by the Council, examine the accounts of the Society.

12. **The** Council may, with the approval of a General Meeting, from time to time appoint fit persons to be Trustees of any part of the real or personal property of the Society, and may make or direct any transfer of such property so placed in trust necessary for the purposes of the trust, or may, at their discretion, take in the corporate name of the Society conveyances or transfers of any property capable of being held in that name. Provided that no sale, mortgage, incumbrance, or other disposition of any hereditaments belonging to the Society shall be made unless with the approval of a General Meeting.

13. **No** Rule, Bye Law, Resolution, or other proceeding shall be made or had by the Society, or any meeting thereof, or by the Council, contrary to the general scope or true intent and meaning of this Our Charter, or the laws or statutes of Our Realm, and anything done contrary to this present clause shall be void.

In witness whereof We have caused these Our Letters to be made Patent.

Witness Ourself, at Westminster, the thirty-first day of January, in the fiftieth year of Our Reign.

By Warrant under the Queen's Sign Manual,

MUIR MACKENZIE.

L. S.

ROYAL STATISTICAL SOCIETY.

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BYE-LAWS OF THE ROYAL STATISTICAL SOCIETY.

Objects of the Society.

1. The objects of the Royal Statistical Society are to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method.

The Society collects new materials, condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms in the English or in any foreign language, and promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the published Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Fellows, elected in the manner hereinafter described.

Number of Fellows and Honorary Fellows.

3. The number of Fellows is unlimited. Foreigners or British subjects of distinction residing out of the United Kingdom may be admitted as Honorary Fellows, of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Society. Every such certificate having been read and approved of at a Meeting of the Council, shall be suspended in the office of the Society until the following Ordinary Meeting, at which the vote shall be taken.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect is required to take the earliest opportunity of presenting himself for admission at an Ordinary Meeting of the Society.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Royal Statis"tical Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that we "will be present at the Meetings of the "Society as often as conveniently we "can, and that we will keep and fulfil "the Bye-laws and Orders of this "Society: provided that whensoever "any one of us shall make known, by "writing under his hand, to the Secre"taries for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"By the "authority, and in the name of the "Royal Statistical Society, I do admit "you a Fellow thereof."

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S., but not in connection with any trading or business advertisement other than the publication of any book or literary notice.

Admission of Honorary Fellows.

7. There shall be Two Meetings of the Society in the year, on such days as shall be hereafter fixed by the Council, at which Honorary Fellows may be elected.

No Honorary Fellow can be recommended for election but by the Council. At any Meeting of the Council any Member thereof may propose a Foreigner or

British subject of distinction residing out of the United Kingdom, delivering at the same time a written statement of the qualifications of, offices held by, and published works of, the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend to the Society the election of the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Fellow unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Fellows, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of Two Guineas, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas,* unless the Annual Subscription or Composition Fee shall be remitted by the Council; provided that the number of Fellows whose Annual Subscription or Composition Fee shall have been thus remitted, do not exceed five at any one time.

Every person elected to the Society shall pay his first subscription (or if he desire to become a Life Fellow, his composition) within three months at the latest of the date of his election, if he be resident in the United Kingdom. If he be resident abroad, this period shall be six months. If payment be not made within the time specified above, the election shall be void.

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited on a card suspended in the office of the Society; and if, at the next Annual General Meeting, the amount still remain unpaid, the defaulter shall, unless otherwise authorised by the Council, be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Fellow, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Honorary Fellow thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Honorary Fellow, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Honorary Fellow be expelled from the Society, the President shall at its next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot and if at least three-fourths of the

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* Cheques should be made payable to "The Royal Statistical Society," and crossed "Messrs. "Drummond and Co."

number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Royal Statistical Society, I do "declare that A. B. (naming him) is no "longer a Fellow (or Honorary Fellow) "thereof."

And such Fellow or Honorary Fellow shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society may be vested in three Trustees, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall consist of a President and thirty Members, together with the Honorary Vice-Presidents.

From the Council shall be chosen four Vice-Presidents, a Treasurer, the Honorary Secretaries, and a Foreign Secretary, who may be one of the Honorary Secretaries. The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents. Any five of the Council shall be a quorum.

Election of President and Officers.

13. The President, Members of Council, Treasurer, and Honorary and Foreign Secretaries shall be chosen annually by the Fellows at the Annual General Meeting.

The Vice-Presidents shall be chosen annually from the Council by the President.

The President shall not be eligible for the office more than two years in succession.

Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected; and of the Members retiring three at least shall be those who have served longest continuously on the Council, unless they hold office as Treasurer or Honorary or Foreign Secretary.

Nomination of President, Council, and Officers.

14. The Council shall, previously to the Annual General Meeting, nominate, by ballot, the Fellows whom they recommend to be the next President and Council of the Society. They shall also recommend for election a Treasurer and the Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Annual General Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any extraordinary vacancy occurring of the Office of President, or other Officer of the Society, the Honorary Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, to be so until the next Annual General Meeting.

Committees.

16. The Council shall have power to appoint Committees of Fellows and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society except by the Council.

Auditors.

17. At the first Ordinary Meeting of each year, the Fellows shall choose two Fellows, not being Members of the Council, as Auditors, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts for the past year, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society, and may report their opinion upon any part of it.

Meetings Ordinary and General.

18. The Ordinary Meetings of the Society shall be held monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July in each year, both inclusive, on such days and at such hours as the Council shall declare. The Annual General Meeting shall be held on such day in the month of June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

19. The business of the Ordinary Meetings shall be to elect and admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the bye-laws or management of the Society shall be discussed at the Ordinary Meetings, except that the Auditors' Report shall be presented at the Ordinary Meeting in February, and that the Minutes of the Annual General Meeting, and of every Special General Meeting, shall be submitted for confirmation at the next Ordinary Meeting after the day of such Annual or Special General Meeting. Strangers may be introduced to the Ordinary Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Annual General Meeting.

20. The business of the Annual General Meeting shall be to elect the Officers of the Society, and to discuss questions on its bye-laws and management. No Fellow or Honorary Fellow shall be proposed at the Annual General Meeting. No Fellow shall propose any alteration of the rules or bye-laws of the Society at the Annual General Meeting, unless after three weeks' notice thereof given in writing to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject as the motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings

21. The Council may, at any time, call a Special General Meeting of the Society when it appears to them necessary. Any twenty Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give at least one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice convening the same.

Duties of the President.

22. The President shall preside at all Meetings of the Society, Council, and Committees which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Fellows. He shall admit and expel Fellows and Honorary Fellows, according to the bye-laws of the Society.

Duties of the Treasurer.

23. The Treasurer shall receive all moneys due to, and pay all moneys owing by, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. The Treasurer shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Honorary Secretaries.

24. The Honorary Secretaries shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall duly record the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A Vice-President, whether Honorary or nominated, in the chair, shall act with the power of the President in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Fellows, or to expel Fellows or Honorary Fellows. In the absence of the President and Vice-Presidents, any Member of Council may be called upon by the Fellows then present. to preside at an Ordinary or Council Meeting, with the same power as a Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, in accordance with the provisions of the Charter.

27. The Council shall be empowered at any time to frame Regulations not inconsistent with these bye-laws, which shall be and remain in force until the next Annual General Meeting, at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Annual General Meeting.

28. The Council shall have the custody of the Common Seal. The Common Seal shall not be affixed to any instrument, deed, or other document, except by order of the Council and in the presence of at least two Members of the Council and in accordance with such other regulations as the Council shall from time to time prescribe. The fact of the seal having been so affixed shall be entered on the minutes of the Council.

29. No Dividend, Gift, Division, or Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

30. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

31. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library and the Reading Room are open daily for the use of Fellows from 10 a.m. till 5 p.m., except on Saturdays, when they are closed at 2 p.m.

2. Fellows of the Society are permitted to take out books on making personal application, or by letter addressed to the Librarian, all expenses for carriage being paid by the Fellows.

3. No Fellow shall have more than ten volumes out at any one time. Fellows are not to keep any books longer than one month. Any Fellow detaining a book for more than a month shall not be permitted to take another from the Library until the book detained shall have been returned.

On the termination of the year for which the subscription has not been paid, a Fellow whose payment is in arrear shall cease to have the privilege of using the Library or of borrowing books therefrom.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated, but may be lent on the written order of an Honorary Secretary for a period not exceeding *seven* days. The Assistant Secretary or Librarian is allowed at his discretion to lend works of reference for a period not exceeding *three* days, reporting at the same time to the Honorary Secretaries. If works so lent be not returned within the specified time, the borrower shall incur a fine of one shilling per day per volume for each day they are detained beyond the time specified.

6. Any Fellow who damages or loses a book, shall either replace the work, or pay a fine equivalent to its value.

7. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Librarian shall report to the Council any infringement of these regulations, and lay upon the table at each regular Meeting (*a*) a List of any "Works of Reference" that may have been borrowed, and (*b*) a List of Books that have been out more than a month.

DONORS TO THE LIBRARY.

During the Year (ending 15th September) 1900.

(a) **Foreign Countries.**

Argentine Republic—
- Census Commission.
- General Statistical Bureau.
- National Health Department.
- *Buenos Ayres.* Provincial and Municipal Statistical Bureaus. Chief of Police.
- *Tucuman.* The Provincial Statistical Bureau.
- Criminalogia Moderna, The Editor.

Austria and Hungary—
- Central Statistical Commission.
- Ministry of Agriculture.
- Statistical Department of the Ministry of Commerce.
- Austrian Labour Department.
- Bohemian Statistical Bureau.
- Bosnia and Herzegovina Statistical Bureau.
- Hungarian Statistical Bureau.
- Brünn Statistical Bureau.
- Budapest Statistical Bureau.
- Prague Statistical Bureau.
- La Hongrie économique.
- Gesellschaft österreichischer Volkswirthe.

Belgium—
- Bureau of General Statistics.
- Belgian Labour Department.
- Bruges, The Burgomaster.
- Brussels Bureau of Hygiene.
- Hasselt, The Burgomaster.
- Royal Academy of Sciences.

Bulgaria. Statistical Bureau.

Chile.—Ministry of Public Instruction.

China. Imperial Maritime Customs.

Denmark—
- Royal Statistical Bureau.
- Copenhagen Statistical Bureau.
- Political Economy Society

Egypt—
- Department of Public Health.
- Director-General of Customs.
- ,, Post Office.
- Ministry of Finance.
- Egyptian Institute, Cairo.
- Comité de Conservation des Monuments de l'Art Arabe.

France—
- Director-General of Customs.
- Director of the Mint.
- French Labour Department.
- Ministry of Agriculture.
- ,, Finance.
- ,, The Interior.
- ,, Justice.
- ,, Public Works.
- Paris Statistical Bureau.
- Dictionnaire du Commerce, The Publishers.
- Economiste Français, The Editor.
- Journal des Economistes, The Editor.
- Monde Economique, The Editor.
- Polybiblion, Revue Bibliographique Universelle, The Editor.
- Réforme Sociale, The Editor.
- Rentier, Le, The Editor.
- Revue d'Economie Politique, The Editor.
- Revue Géographique Internationale, The Editor.
- Revue de Statistique, The Publisher.
- Statistical Society of Paris.

During the Year 1899—1900—*Contd.*

(a) **Foreign Countries**—*Contd.*

Germany—
- Imperial Health Bureau.
- ,, Insurance Bureau.
- ,, Judicial Bureau.
- ,, Statistical Bureau.
- German Consul-General, London.
- Bavaria, The Government of.
- Prussian Royal Statistical Bureau.
- Saxony Royal Statistical Bureau.
- Berlin Statistical Bureau.
- Dresden Statistical Bureau.
- Frankfort Chamber of Commerce.
- Frankfort Statistical Bureau.
- Hamburg Statistical Bureau.
- Hanover Statistical Bureau.
- Allgemeines Statistisches Archiv, The Editor.
- Archiv für Soziale Gesetzgebung, &c., The Editor.
- Jahrbuch für Gesetzgebung, &c., The Editor.
- Jahrbücher für Nationalökonomie und Statistik, The Editor.
- Zeitschrift für die gesamte Staatswissenschaft, The Editor.
- Zeitschrift für Socialwissenschaft, The Editor.
- Geographical and Statistical Society of Frankfort.

Greece. Statistical Bureau.

Italy—
- Director-General of Statistics.
- ,, Agriculture.
- ,, Customs.
- Economista, The Editor.
- Giornale degli Economisti, The Editor.
- Rivista Italiana di Sociologia, The Editor.

Japan—
- Consul-General, London.
- Agricultural and Commercial Department.
- Bureau of General Statistics.

Mexico—
- Statistical Bureau.
- Superior Council of Health.

Netherlands—
- Central Statistical Commission.
- Department of the Interior.
- ,, Finance.
- Director-General of Customs.

Norway—
- Central Statistical Bureau.
- Ministry of Public Instruction.
- Christiania Health Department.

Portugal—
- General Statistical Bureau.
- Oporto Statistical Bureau.

Roumania—
- Statistical Bureau.
- Bucharest Statistical Bureau.

Russia—
- Central Statistical Committee.
- Controller of the Empire.
- Customs Statistical Bureau.
- Department of Agriculture.
- Department of Trade and Manufactures.
- Ministry of Finance.
- Bulletin russe de Statistique financière, The Editor.
- Russian Journal of Financial Statistics, The Editor.
- Finland Statistical Bureau.

Servia—
- Statistical Bureau.
- Customs Department.

During the Year 1899—1900—*Contd.*

(a) **Foreign Countries**—*Contd.*

Spain—
- Director-General of Customs.
- Statistical Bureau of Madrid.
- Geographical Soc. of Madrid.

Sweden—
- Central Statistical Bureau.
- Stockholm Health Department.
- Royal University of Upsala.

Switzerland—
- Federal Assurance Bureau.
- ,, Statistical Bureau.
- ,, Department of Customs.
- ,, ,, of Finance.
- Statistical Society.
- Swiss Union of Commerce and Industry.
- Geneva Public Library.

United States—
- Bureau of Education.
- ,, Ethnology.
- ,, Foreign Commerce.
- Commissioner of Labor.
- Comptroller of the Currency.
- Department of Agriculture.
- Director of Geological Survey.
- Director of the Mint.
- Interstate Commerce Commission.
- Naval Observatory.
- War Department.
- Secretary of the Treasury.
- ,, Interior.
- Surgeon-General, U. States Army.
- Statistical Bureau, Treasury.
- *Connecticut*—
  - State Board of Health.
  - Bureau of Labor Statistics.
- *Illinois.* Bureau of Labor Statistics.
- *Indiana.* Bureau of Labor Statistics.

United States—*Contd.*
- *Iowa.* Bureau of Labor Statistics.
- *Kansas.* Bureau of Labor Statistics.
- *Maine.* Bureau of Labor and Industrial Statistics.
- *Manitoba.* Department of Agriculture.
- *Maryland.* Bureau of Industrial Statistics.
- *Massachusetts*—
  - Board of Arbitration.
  - ,, Health, Lunacy, &c.
  - Bureau of Labor Statistics.
  - Metropolitan Water Board.
- *Michigan*—
  - Bureau of Labor and Industrial Statistics.
  - Division of Vital Statistics.
- *Minnesota*—
  - Bureau of Labor Statistics.
  - State Board of Charity.
- *Missouri.* Bureau of Labor Statistics.
- *Nebraska.* Bureau of Labor and Industrial Statistics.
- *New Hampshire.* Bureau of Labor Statistics.
- *New Jersey.* Bureau of Labor Statistics.
- *New York* Public Library.
  - ,, Bureau of Labor Statistics.
  - ,, State University.
- *North Carolina.* Bureau of Labor Statistics.
- *Ohio.* Bureau of Labor Statistics.
- *Pennsylvania.* Bureau of Industrial Statistics.

During the Year 1899—1900—*Contd.*

(a) **Foreign Countries**—*Contd.*

United States—Contd.

Wisconsin—

Bureau of Labor Statistics.

State Board of Health.

Boston Department of Municipal Statistics.

Bankers' Magazine, The Editor.

Bradstreet's Journal, The Editor.

Commercial and Financial Chronicle, The Editor.

Engineering and Mining Journal, The Editor.

Journal of Political Economy, The Editor.

Political Science Quarterly, Columbia College, The Editor.

Quarterly Journal of Economics, The Editor.

Yale Review, The Editor.

Academy of Arts and Sciences.

Academy of Political and Social Science.

United States—Contd.

Actuarial Society of America.

Astronomical Society, Chicago.

Economic Association, Baltimore.

Geographical Society, New York.

Philadelphia Commercial Museum.

Philosophical Society, Philadelphia.

Sound Currency Committee.

Statistical Association, Boston.

Columbia College, New York.

Leland Stanford Junior University.

John Crerar Library.

Johns Hopkins University.

Smithsonian Institution.

Yale University.

Uruguay—

Statistical Bureau.

Director of Civil Registration.

Montevideo Statistical Bureau.

(b) **India, and Colonial Possessions.**

India, British—

Director-General of Statistics.

Finance and Commerce Depart.

Revenue and Agricultural Department.

Lieutenant-Governor of Bengal.

Bengal, The Collector of Customs.

East India Railway.

Indian Engineering, The Editor.

Asiatic Society of Bengal.

Bombay Branch of the Royal Asiatic Society.

Canada—

Department of Agriculture.

Ontario Bureau of Industries.

Manitoba. Department of Agriculture.

Insurance and Finance Chronicle, The Editor.

Royal Society of Canada.

Cape of Good Hope—

Agent-General for the Cape.

Colonial Secretary.

Registrar-General.

Ceylon—

Lieut.-Governor and Colonial Secretary.

General Manager of Government Railways.

Jamaica. Registrar-General.

Mauritius. The Colonial Secretary.

New South Wales—

Agent-General, London.

Government Statist, Sydney.

Registrar-General.

During the Year 1899—1900.—*Contd.*

(b) **India, and Colonial Possessions**—*contd.*

New Zealand—
- Registrar-General.
- Registrar of Friendly Societies.
- Department of Mines.
- Insurance Department.
- Labour Department.
- New Zealand Institute.
- Trade Review, The Editor.
- Wellington Harbour Board.

Queensland—
- Agent-General, London.
- Registrar-General.

Rhodesia. British South Africa Company.

South Australia—
- The Chief Secretary.
- The Registrar-General.
- Government Statist.
- Public Actuary.
- Public Library.

Straits Settlements. The Government Secretary, Perak.

Tasmania—
- Government Railways Department.
- Government Statistician, Hobart
- Royal Society of Tasmania.

Victoria—
- Hon. the Premier of Victoria.
- Assist. Government Statist.
- Actuary for Friendly Societies.
- Royal Society of Victoria.
- Public Library, &c., Melbourne.

Western Australia—
- Agent-General for W. Australia.
- The Government Actuary.
- Acting Collector of Customs.
- Registrar-General.

(c) **United Kingdom and its several Divisions.**

United Kingdom—
- Admiralty Medical Department.
- Board of Agriculture.
- Army Medical Department.
- ,, Veterinary Department.
- Board of Trade.
- British Museum.
- Customs, Commissioners of.
- Friendly Societies, Registrar of.
- Home Office.
- India Office.
- Inland Revenue, The Commissioners.
- Labour Department.
- Local Government Board.
- Metropolitan Asylums Board.
- Royal Mint.
- War Office, Intelligence Department.
- Woods, Forests, &c., H.M.

England—
- Registrar-General of England.
- London County Council.
- ,, School Board.
- Metropolitan Asylums Board.
- ,, Commissioner of Police.
- Battersea, The Vestry of.
- Fulham Public Library.
- Wandsworth Board of Works.
- Birmingham City Treasurer.
- Bradford City Accountant.
- Leicester Borough Accountant.
- Liverpool Free Public Library.
- Manchester Free Public Library.
- Mansion House Council on Dwellings of the Poor.
- Mersey Conservancy.

During the Year 1899—1900—*Contd.*

(c) **United Kingdom and its several Divisions**—*Contd.*

England—Contd.

The Medical Officer of Health of the Local Government Board and of the following towns: Birkenhead, Birmingham, Bolton, Bradford, Brighton, Bristol, Cardiff, Derby, Halifax, Huddersfield, Hull, Leeds, Leicester, Liverpool, Manchester, Newcastle-on-Tyne, Norwich, Nottingham, Preston, Salford, Sunderland, West Hartlepool, Wigan, Wolverhampton.

Ireland. Registrar - General of Ireland.

Scotland—

Education Department.
Registrar-General of Scotland.
Edinburgh City Chamberlain
Aberdeen Medical Officer.
Glasgow Medical Officer.

Channel Islands. Guernsey Board of Health.

(d) **Authors, &c.**

Abbott, Samuel W., Boston.
Acworth, W. M., London.
Allan, Dr. F. J., London.
Atkinson, Edward, U.S.A.
Back, Frederick, Tasmania
Barrett, Miss Rosa M., Dublin.
Bell, Fred. W., Cape Town.
Bernstein, Edward, Stuttgart.
Bertillon, Dr. J., Paris.
Biddle, Dr. D., London.
Billings, Dr. J. S., Washington.
Blenck, Herr E., Berlin.
Böckh, Dr. R., Berlin.
Bodio, Professor Luigi, Rome.
Bonwick, James, London.
Bosco, Augusto, Rome.
Bourinot, Sir J. G., K.C.M.G., LL.D.
Boutcher, Mortimore, & Co., London.
Bowack, William M., Edinburgh.
Bowley, A. L., London.
Brabrook, E. W., London.
Brown, Nicol, London.
Burdett, Sir Henry, London.
Clarke, Sir Ernest, London.
Coghlan, T. A., Sydney.
Constable, A. & C., London.
Cohn, Dr. Gustav, Germany.
Conrad, Dr. J., Jena.
Cooper, Joseph, Farnworth.
Copeland, Professor R., Edinburgh.
Craigie, Major P. G., London.
Crawford, R. F., London.
Cunningham, Rev. W., Cambridge.
Daschkevitch, His Excellency V. K., St. Petersburg.
Deane, Albert B., London.
Doyle, Patrick, Calcutta.
Dryden, John F., Newark, U.S.A.
Dun, R. G. & Co., New York.
Eaton & Sons, H. W., London.
Ellison & Co., Liverpool.
Elder, Dempster & Co., London.
Engel, Dr., Cairo.
Fanno, Marco, Turin.
Ferraris, Carlo F., Rome.
Fischer, Herr Gustav, Jena
Fleming, Owen, London.
Folkmar, Daniel, Chicago.
Ford, Worthington C., U.S.A.
Fornasari di Verce, Dr. E., Italy.
Forster, John W., Nottingham.
Foville, M. A. de, Paris.
Fratelli Bocca, Torino.
Garland, N. S., Ottawa.

During the Year 1899—1900—*Contd.*

(d) **Authors,** &c.—*Contd.*

Ginsburg, Dr. B. W., London.
Gooch, Thomas & Sons, London.
Gordon & Gotch, Brisbane.
Gouge, Herbert D., Adelaide.
Gow, William, London.
Gow, Wilson, & Stanton, London.
Guillaume, Dr. Louis, Bern.
Guillaumin et Cie., Paris.
Guyot, M. Yves, Paris.
Haggard, F. T., Tunbridge Wells.
Hall, Thomas, New South Wales.
Harrison & Sons, London.
Hart, Sir R., Bart., G.C.M.G., Peking.
Hayward, T. E., Haydock.
Helmuth Schwartze & Co., London.
Hoar, Hon. George F., U.S.A.
Hoepli, Manuali, Milan.
Humphreys, N. A., London.
Hyde, John, U.S.A.
Inama-Sternegg, Dr. K. T., Vienna.
Janssens, Dr. E., Brussels.
Jay, E. A. Hastings, London.
Johannis, Arturo J. de, Florence.
Johnson, Geo., Ottawa.
Johnston, R. M., Hobart.
Juraschek, Dr. F. v., Vienna.
Kegan Paul & Co., London.
Keltie, J. Scott, London.
Kemper, Dr. G. de Bosch.
Kennedy, Sir Charles, Exmouth.
Kiaer, M. A. N., Christiana.
King, A. W. W., London.
King, P. S. & Sons, Westminster.
Knights, J. M., London.
Körösi, M. Joseph, Budapest.
Latham, Baldwin, London.
Latzina, Dr. F., Buenos Ayres.
Leigh-Browne Trust, The, London.
Leroy-Beaulieu, M. Paul, Paris.
Levasseur, E., Paris.
Linroth, Dr. K., Stockholm.
Longmans & Co., London.
Lozé, Ed., Paris.
McHardy, C. McL., London.
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Marshall, Alfred, Cambridge.
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Mathieson & Sons, F. C., London.
Mayo-Smith, Richmond, New York.
Mayr, Dr. G. von, Strassburg.
Methuen & Co., London.
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Molinari, M. G., Paris.
Money, Alonzo, C.B., Cairo.
Morgan, Percy C., London.
Morrison, Rev. W. D., London.
Moss & Co., R. J., Egypt.
Neumann, J. O., London.
Newsholme, Dr. A., Brighton.
Neymarck, A., Paris.
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O'Conor, J. E., C.I.E., India.
Page & Gwyther, London.
North, S. M. D., Washington.
Palgrave, R. H. Inglis, Yarmouth.
Palmer, Sir E. M., K.C.M.G., Cairo.
Perthes, Justus, Gotha.
Petersen, Aleksis, Copenhagen.
Pierson, Israel C., New York.
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Ross, C. Edmondstone, Calcutta.
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Salandra, Antonio, Rome.
Sanderson, Frank, Toronto.
Schloss, David F., London.
Schmoller, Dr. G., Germany.
Schweitzer, Dr. Carl A. v., Vienna.
Scott, R. C., Liverpool.
Seligman, Prof. E. R. A., New York.
Seyd, Richard, London.
Sherwell, Arthur, York.
Shillito, J., York.
Sidenbladh, Dr. K., Stockholm.
Smith, Charles W.
Stanton, A. G., London.
Stein, Sigmund, Liverpool.
Street, G. & Co., London.
Supino, Camillo, Turin.
Turnbull, Charles C., London.
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Thomas, Dr. J. Tubb, Trowbridge.
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Actuaries, Institute of.
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,, Iron Trade Association.
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Civil Engineers, Institution of.
Cobden Club.
East India Association.
Glasgow Philosophical Society.
Howard Association.
Imperial Institute.
Incorporated Accountants' Society.
International Statistical Institute.
Iron and Steel Institute.
Liverpool Lit. and Phil. Society.
London Chamber of Commerce.
,, Hospital.
Manchester Lit. and Phil. Society.
,, Statistical Society.
Medical Officers of Health, Society of.
Middlesex Hospital.
Mitchell Library, Glasgow.
Naval Architects, Institution of.
Peabody Donation Fund.
Royal Agricultural Society.
,, Asiatic Society.
,, College of Physicians.
,, College of Surgeons.
,, Geographical Society.
,, Institution of Great Britain.
,, Irish Academy.
,, Meteorological Society.
,, Society, Edinburgh.
,, Society, London.
,, United Service Institution.
St. Bartholomew's Hospital.
Sanitary Institute of Great Britain.
Secretaries, Institute of, London.
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